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FFY2011 Specialty Crop Block Grant

Final Report

Agreement #12-25-B-1216

December 26, 2014
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*Projects in bold were Final Reports and were accepted in last Annual Report; non-bold projects have changed.

PROJECT SUMMARY

The stimulus for submitting the Year 1 and Year 2 grant proposals was to gather a more cohesive community effort around drawing visitors from both the I-70 corridor and the surrounding Grand Valley for longer visits to the agritourist, tourist and other agricultural enterprises in Palisade and surrounding areas, especially including wineries as a strong draw. Organization of the Study Group for the Fruit and Wine Trail actually started in the time pending the Year 1 grant start date, utilizing some of the cooperators on the grant proposal. Shortly after the start date, both the cooperators listed on the grant proposal and additional area businesses and other potential interested parties were sent a notice about the grant and an invitation to participate. Those who responded were sent an initial survey and asked to reply or bring the survey to a facilitated meeting to discuss the project proposal and related agritourism and community issues. This initial survey formed the baseline for measuring future impacts of the Fruit and Wine Trail. A professionally facilitated meeting, to gather community information and buy-in, was held on February 11, 2011 in Palisade. Facilitation brought out two main results, culminating in formal approval of the group and project: 1) A strong community desire to participate in the project, if it yielded cooperative efforts that benefit all; 2) A broad and strong display of participant business and promotional talent and previous experience that promised good project results.

From this meeting, three working groups emerged: a Vision Group, Signage Group, and Marketing Group. Each group has worked fairly independently to accomplish its goals. Even though these goals were ambitious, the deliverables for both the first and second years have been realized. A second year of funding was proposed to continue the Fruit and Wine Trail project which was officially designated by Mesa County during a signage hearing as the Palisade Fruit & Wine Byway (PFWB). The second year grant was funded by Specialty Crops Block Grant to Colorado Association of Viticulture and Enology (CAVE). The new Contract 37747 was awarded and was titled "Further Development of the Infrastructure of the Fruit and Wine Trail. The Year 2 funding was intended to further develop the infrastructure for the PFWB with additional signage for the byway loops and create a richer tourist experience and more interest in local vineyards and other fruit and vegetable value-added businesses. Sub-committees were formed from both members of the Year 1 working groups and new interested individuals to handle the tasks of a kick-off dedication of the Palisade Fruit & Wine Byway, marketing, a phone app, kiosk and signage gaps, maps, and drive loops for the Year 2 grant. Due to major spring cold weather issues, a portion of the tasks involved in this project were delayed and an extension to this grant was given under Amendment CMS #52065.

PROJECT APPROACH

Key Year 2 activities and tasks performed include:

1. Dedication of the Palisade Fruit & Wine Byway that took place along the Byway travel route at the entrance to High Country Orchards & Vineyards and Colterris Winery. Fruit & Wine Byway project cooperators and key partners were recognized at a reception following the dedication. Over 120 supporters attended the reception. This number included vineyard, orchard and winery owners, CAVE staff and members of the committee.
2. Increased physical and signage footprint of the Palisade Fruit and Wine Byway (PFWB) by installing additional signage along county and Town of Palisade roads.
3. Achieving official byway designation of PFWB on various maps.
4. Increasing the number of area businesses participating in the signage and promotional efforts of PFWB.
5. Increased development and distribution of brochures, maps and social media marketing. The Palisade Fruit & Wine Byway Facebook Page was created on March 4. 2011. Since this time, the page has grown to nearly 350 "likes" all of which are organic (http://www.facebook.com/PalisadeFruitandWineByway). We continue to update the community and surrounding public as to events happening along the Fruit & Wine Byway. We work closely with CAVE, the Palisade Chamber of Commerce and the Town of Palisade to drive users, both virtually and physically along the Byway. PFWB is on the Palisade Tourism website and has links to PFWB businesses on the Palisade Chamber of Commerce website. PFWB businesses are linked to the nationwide American Wine Trail phone application (http://americaswinetrails.com/wine-trails/colorado-wineries/palisade-fruit-and-wine-trail) (http://americaswinetrails.com/).
6. Implementation of a phone application. PFWB businesses are linked to the nationwide American Wine Trail phone application (http://americaswinetrails.com/wine-trails/colorado-wineries/palisade-fruit-and-wine-trail) (http://americaswinetrails.com/).
7. Building a permanent kiosk at Exit 42 off of I-70 in Palisade.

GOALS AND OUTCOMES ACHIEVED

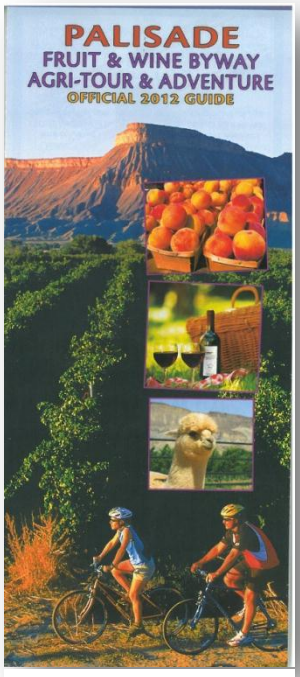
Increase visibility and usage of the Palisade Fruit & Wine Byway

Increase visibility and usage of the Palisade Fruit & Wine Byway

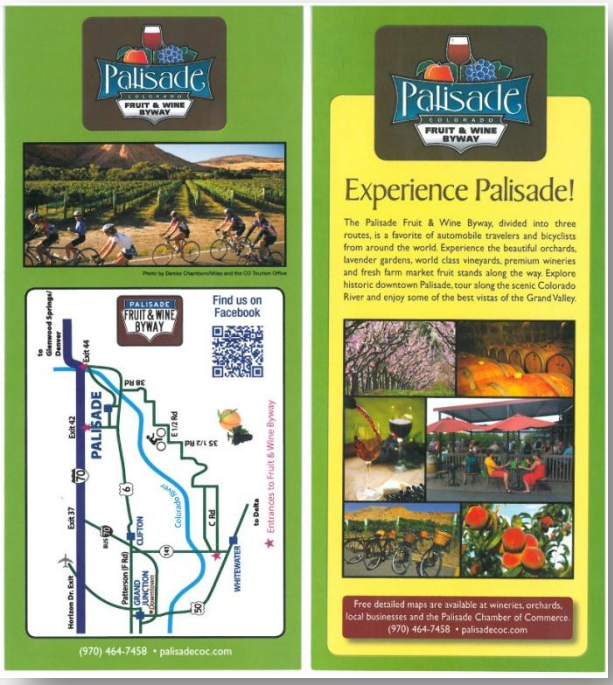
1. Dedication of the Palisade Fruit & Wine Byway took place in May 2012 along the Byway travel route at the entrance to High Country Orchards & Vineyards and Colterris Winery**.**
    a. The Mesa County Commissioners, original Fruit & Wine Byway project cooperators and key partners of the Year 1 grant were recognized at a reception following the dedication.
    b. A media release was sent out by Mesa County inviting various media and prominent citizens to the event providing visibility to the PFWB.

c. Agricultural businesses along the Fruit & Wine Byway had an opportunity to promote themselves by offering or exhibiting examples of their products and services at the reception. This included wine, fruit, preserves and local produce. Over 20 business and organizations took advantage of promoting themselves during the dedication in the form of wine, preserves, produce or other donations. This resulted in greater awareness of all that the PFBW has to offer and many businesses saw an increase in sales and traffic.

2. Increased physical and signage footprint of the Palisade Fruit and Wine Byway (PFWB) by the addition of signage along county and Town of Palisade roads.
    a. Twenty additional PFWB signs and directional arrows were purchased to fill in gaps along roadways where needed, providing better directions along the various routes and help tie roads to routes on designated on maps.
    b. Signage was installed on roads by the Town of Palisade and Mesa County Transportation Department.
    c. PFWB is firmly established as both a physical and marketing agri-tourism presence, with signage on I-70 and Old US Hwy 6 and Co Hwy 141 and Mesa County roads on East Orchard Mesa.
    d. Sales and visibility have increased for all business located along the PFWB. Most are seeing an increase anywhere from 10%-30% since the inception of the PFWB.
3. Achieving official byway designation of PFWB on various maps that included
    a. The Palisade Chamber of Commerce *Fruit & Wine Byway Agri-tour & Adventure Official Guide* produced in 2012 and 2013 ***(see below).***
    b. The Palisade Fruit & Wine Byway brochure map.



Fruit & Wine Byway Agri-tour & Adventure Official Guide

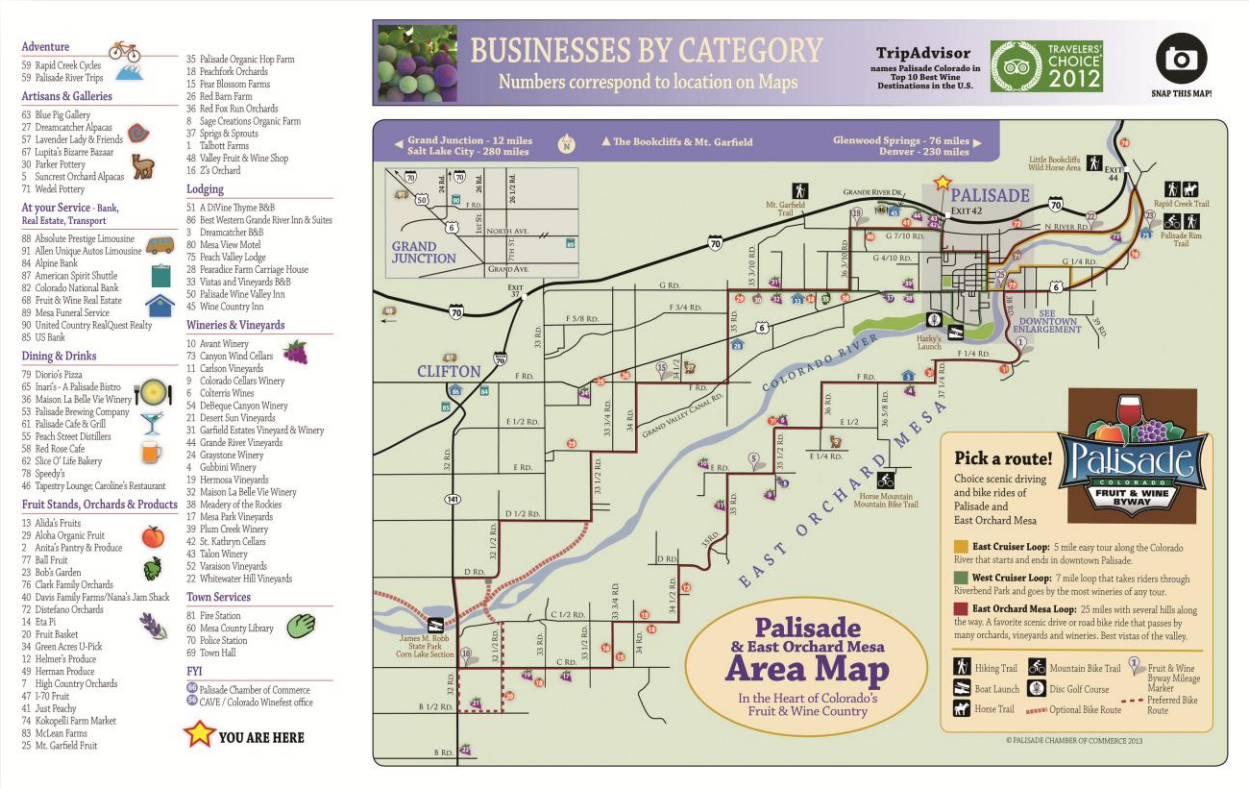


Palisade Fruit & Wine Byway Rack Card

4. Increased development and distribution of brochures, maps and social media marketing
    a. A rack card was designed ***(see above)*** and 30,000 copies were distributed along the I-70 corridor and in towns along Highway 50 up to Ridgeway. After the initial supply of rack cards were distributed, it was redesigned as a brochure with a more detailed map and reprinted with 42,000 copies distributed to the businesses on the Byway, businesses in the town of Palisade, the Grand Junction Visitor and Convention Bureau, at various wine and local festival productions, Grand Junction hotels and businesses, the local newspaper and various publications, various local, national and international magazine writers and front range locations. Also, the electronic version was e-mailed to numerous publications, tour groups, Whole Foods Markets, AJ's Markets, and Kroger for use in their electronic social media.
    b. Continually monitored and updated the Palisade Fruit & Wine Byway Facebook page http://www.facebook.com/PalisadeFruitandWineByway with 315 likes by September, 2013. The PFWB appears on the Palisade Tourism website http://www.palisadetourism.com/attractions/item/fruit-wine-trail and has links to PFWB businesses on the Palisade Chamber of Commerce website.
5. Implementation of a phone application
    a. The Palisade Fruit & Wine Byway became a sponsor for America's Wine Trails mobile phone app as a means of marketing and drawing focus to the project. The sponsorship includes a pop-up banner that randomly appears throughout the app linking to the wine trail page.
    b. The app has great features for discovering wine regions across America and shows off wineries along the PFWB to thousands of new customers. It is free to the consumer and can be downloaded for iOS and Android phones at either AmericasWineTrails.com or the app stores.
    c. The phone app has generated a click through rate of 1,928 from 12/01/12 to 12/18/13. The total number of page views on the PFWB page is 6,021 to date.
    d. PFWB wineries are linked to a phone application at (http://americaswinetrails.com/wine-trails/colorado-wineries/palisade-fruit-and-wine-trail) and to the American Wine Trail nationwide application (http://americaswinetrails.com/).

6. Building a permanent kiosk at Exit 42 off of I-70 in Palisade
    a. A permanent kiosk was built at Exit 42 off of I-70 in Palisade as a joint effort of area businesses. The kiosk is located at the main entrance into Palisade along the I-70 corridor ***(see below).***
    b. The kiosk contains an enlarged map of the Palisade Fruit & Wine Byway with location numbers ***(see map, page 5)***, brochure racks for rack cards for businesses along the PFWB and information on Palisade special events to attract tourists and travelers to Palisade.
    c. The kiosk will have permanent management by Palisade Chamber of Commerce.

Palisade Fruit & Wine Byway Kiosk off of Exit 42 on I-70



Palisade Fruit & Wine Byway map located in Kiosk at Exit 42

Increase the number of businesses that participate in the Palisade Fruit & Wine Byway

1. Significantly increased the number of area businesses participating in the signage and promotional efforts of PFWB.
    a. Individual and business interest and/or involvement in meetings and the sub-committee process increased from 29 individuals to an average of 50 people who either attended meetings or requested updates on the progress of the PFWB from the period of 2011 to 2013.
    b. Through marketing, the PFWB was able to substantially increase business involvement and listings on the map from 57 to 92 businesses from the period of 2011 to 2013.

BENEFICIARIES

- PFWB participants along signed route testify that customers were aided by PFWB signage to get to their businesses. These testimonials were part of the survey conducted for the 1st Year grant. There were 50 surveys distributed to business along the PFWB and 25 surveys were returned. The survey asked questions pertaining to the visibility of PFWB signage, if any comments from customers were received regarding the PFWB signage/existence and if they thought the PFWB supports agri-tourism. The results were very much in favor of the PFWB and produced positive feedback from those surveyed.

- All 92 businesses and organization associated with the PFWB have benefited one way or another. The amount of local, statewide and national coverage of this project is incomparable and through that, more and more people are now aware of all that Palisade has to offer. Several business reported a sharp increase in traffic after the signage went up. The maps and printed collateral continue to offer guests a tangible "road map" to all that the PFWB offers.

- Town of Palisade is using the PFWB kiosk and trail loop identifiers to guide tourist traffic within town boundaries and specify portions of PFWB that contain downtown businesses. PFWB members were surveyed and reported positive impacts on their businesses from PFWB, and the Town of Palisade noted increased media exposure locally, statewide, and nationally

- Mesa County built a pedestrian and bike bridge over Colorado River along the PFWB route, and traffic to that bridge is aided by inclusion in PFWB maps and signage.

- PFWB participants got quantification of impact of PFWB on participants and Palisade via follow-up survey results. Consumers were asked when they entered the businesses on the Fruit & Wine Byway how they found them. Consumer responses were overwhelmingly positive that they found their way to the businesses via the “On the Byway” trail map. The “On the Byway” trail map was the most preferred map to use by wine tasters. There were 42,000 “On the Byway” trail maps printed and distributed in 2013.

- The Palisade Chamber of Commerce will become the overseeing organization for the PFWB Committee. This will enable the Chamber to coordinate and collaborate with projects that involve the Byway in the future.

- The community has received initial interest and commitments to build a second kiosk with donations of materials and labor. The anticipated completion for the second kiosk is spring of 2014.

- The Town of Palisade and the surrounding community have begun to use the PFWB in printed materials and articles to more easily reference areas in Palisade. The Town of Palisade noted increased media exposure locally, statewide, and nationally. PFWB membership and Town of Palisade approve of initial efforts and want to expand and improve future PWFB signage and marketing efforts.

LESSONS LEARNED

- Getting signage that fits county planning and transportation policies required changing name from Palisade Fruit and Wine Trail to Palisade Fruit and Wine Byway (PFWB). However, this became a huge plus, as the county linked the PFWB to a new pedestrian/cycling bridge over the river that then linked much more safely to the Mesa County Riverfront Trail and CO Hwy 141 north of the Colorado River.

- A physical trial placement of a working model of the wayfinding signs was not done before the signs were produced, and some visibility issues with the text and logo on the sign occurred.
- Deciding to approach a broad range of potential participants and do a facilitated meeting with potential participants proved essential to establishing project motivation and organization to cooperators and to completion of the project.
- Initially, a much more symbiotic relationship with the website of the Town of Palisade was envisioned than resulted, resulting in a lack of identification on Palisade tourism website of PFWB. This was recently resolved and is now listed on the Palisade tourism website.

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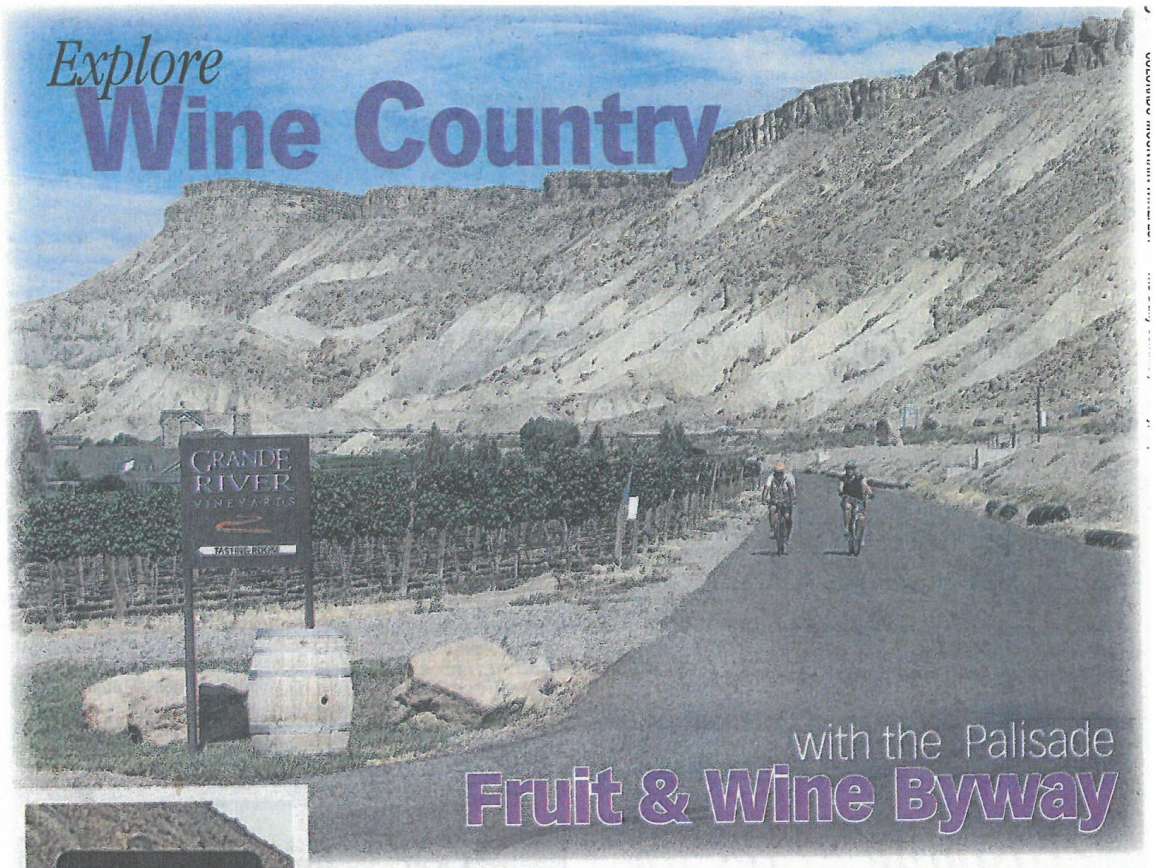
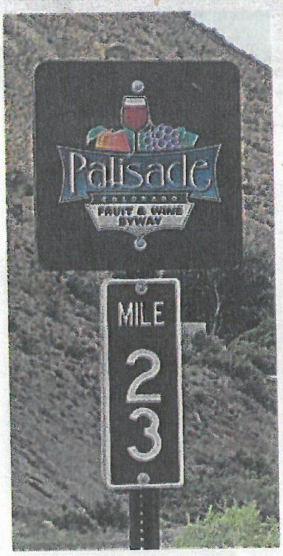
ADDITIONAL INFORMATION

Explore Wine Country with the Palisade Fruit & Wine Byway





PENNY STINE/Special Sections
While some of the Fruit and Wine Byway signs include directional arrows, others include mileage markers so cyclists know how much farther they have to pedal.

Locals know how to find their favorite winery to sample their latest wines, whether that winery is right off the interstate or up a dirt driveway on East Orchard Mesa. Locals also know the best route to take in order to take visitors on a wine-tasting tour, hitting as many wineries as possible in a day.

By Penny Stine
Special sections staff writer

Likewise, locals have also known the best routes to take for scenic rides through the orchards and vineyards on bikes, cars or motorcycles. Locals have also known where to find wine, apples, alpaca yarn, lavender, pumpkins, peppers, tomatoes, cherries and all the other delightful offerings produced by local growers.

It was a bit trickier for visitors, however, who often toured the first winery they found off the interstate and then had to ask directions to find the next one. There was probably more than one Front Range skeptic who thought the yahoos over here on the Western Slope were pulling his leg, telling him to look for something called D 1/4 Road.

Navigating around the orchards and vineyards is easier this year, thanks to those helpful Palisade Fruit & Wine Byway signs that are posted in multiple places, including on Interstate 70, Colorado Highway 141, U.S. Highway 6 and at intersections and mile markers along the route.

Those brown signs may look deceptively simple, but their story represents a total cost of more than $40,000, two separate grants and a cooperative effort of Herculean proportions.

"I got a notice from the Department of Agriculture that they were doing specialty crop grants and were looking to fund projects," said Steve Menke, enologist with Colorado State University Western Colorado Research Center.

Menke had often discussed agritourism efforts with winemakers, vineyard owner and orchard owners, most of whom had been promoting agritourism and the local food movement for more than a decade. Menke thought the grant could help agricultural producers and local business owners come together with a clear objective and sense of purpose. The grant required a shared cost, and the Colorado Association of Viticulture and Enology (CAVE) and other entities came through to match funds given through the grant.

Getting the route approved and the signs designed, manufactured and installed in a little over a year took a cooperative effort that involved

// Please see **BYWAY, next pag**

BYWAY

/ Continued from **previous page**

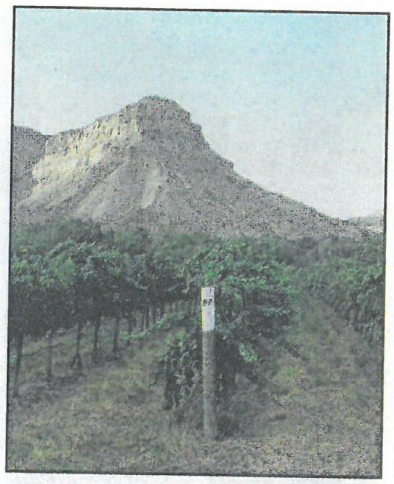
epresentatives from CAVE, Colorado State Jniversity, the town of Palisade, Mesa County, ıe Colorado Department of Transportation, rchards, vineyards, business owners in town, usiness owners in the county and others with financial stake in Palisade, East Orchard Mesa and the east end of the valley.

"I've worked with multiple entities, but othing with this broad of a spectrum," aid Menke. "I hope it will translate into permanent entity and fruit and byway ıembers will do other projects."

The byway ties into the Colorado Riverfront rail system, which made it an easy decision r Mesa County to support the idea. Byway elievers were also quick to enlist Mesa ounty Commissioner Steve Aquafresca, hose support and knowledge of the best ·ocedures to follow and people to involve ·oved invaluable.

The county was already planning the ·edestrian bridge east of 32 Road as an ternate, safer way for pedestrians and cyclists to cross the Colorado River and ·oid the heavy traffic on the 32 Road bridge. "I hadn't expected the depth of participation ɔm the biking crowd," Menke said. "Bicycle ·ople became an important part of the effort. ıadn't thought of it as a bike route, I saw it ore for cars."

As one of those bicycle people, Rondo



Buecheler with Rapid Creed Cycles was involved in the effort from the beginning. The biggest contribution from cyclists like him, according to Buecheler, was helping to plot the routes.

"The route is slightly different from the one bicyclists have been using for years," said Buecheler, who has been urging riders to try the Fruit Loop, as it was known among local enthusiasts, ever since he opened his bike shop in Palisade.

The byway includes a 25-mile loop that takes motorists or bicyclists up over the river and onto East Orchard Mesa and two shorter routes that offer visitors five and seven-mile options that go over flatter, less strenuous terrain through the orchards and vineyards closer to the town of Palisade.

"We're getting more and more people who are aware of it," Buecheler said. "Ninety percent of the people who rent a bike from me are using it."

The byway opens up possibilities for families who are visiting and want multiple options for riders with differing abilities.

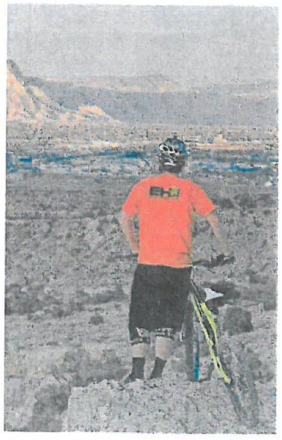
"Husbands can do the Palisade Rim Trail, a brand new, world-class mountain bike trail, and their wives can do a winery trail," Buechelor said.

Although most of the 100-plus signs have been installed, the signs aren't the only result of the cooperative effort. Organizers hope that this isn't the end of the effort by the producers and business owners in Palisade and East Orchard Mesa, either.

"We're working on a phone app with Wine America," said Sandie Cooper with CAVE. "We added print components and a route card that's distributed along the I-70 corridor and down to Ridgway. We also want to do a kiosk or two, depending on dollars."

The Palisade Fruit and Wine Byway became a reality because many different people with various agendas all came together for a purpose. Palisade boosters hope it's one of many achievements they all reach together.

INSIDE SPRING 2013 ride



Section Editor
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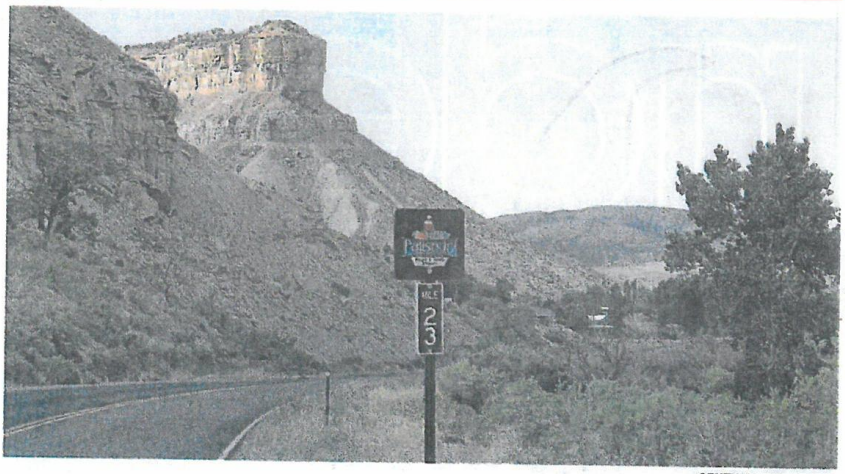
Cover photo provided by
ENDOHOLICS
Design and layout



SENTINEL FILE PHOTO

The mileage markers are helpful so cyclists know how much farther they have to pedal. The scenery along the route is spectacular, the orchards, vineyards and wineries are friendly, but sometimes, the shoulder is non-existent.

Visit the byway for a great road ride

By PENNY STINE
penny.stine@gjsentinel.com

In addition to the mountain bike trails in, around and above the Grand Valley, there are some great rides on roads for those who prefer skinny tire travels. The Fruit and Wine Byway is a designated route that takes cyclists through the orchards and vineyards of Palisade and East Orchard Mesa.

Local riders have followed the route for years, often referring to it as the "fruit loop." It can be hazardous to those who aren't familiar with the roads, however, since the route twists and turns, barely avoiding dead ends and dirt roads. Thanks to a remarkable spirit of cooperation between farmers, wineries, business owners, government entities and other community leaders, there are close to 100 signs along the route, with mile markers so cyclists can figure out where they are.

There are multiple places to get on and off the route, with informational kiosks that will be constructed before June 2013 at both Exit 44 and Exit 42 on Interstate 70. The kiosks include a large posted map and smaller maps that visitors are welcome to stuff in a pocket or a backpack.

At Exit 44, there is also a parking lot and access to the Rim Trail, one of the Palisade-area mountain bike routes. Cyclists are welcome to park at Grande River Vineyards off Exit 42 and access the trail from there, too.

The route offers a little something for everyone. Hardcore cyclists who want a challenging ride will appreciate the climb up to East Orchard Mesa after crossing the pedestrian bridge near 32 Road. On the East Orchard Mesa side, the terrain is more hilly, giving those who cross the river and attempt the entire 23-mile route a good workout. The entire byway is paved.

Those who'd prefer flat terrain or a shorter distance can stay on the route as it tours around the Vinelands area east of Palisade, and then detour through downtown or follow the signs and tour the orchards and vineyards west of Palisade.

For an added diversion that doesn't add much distance but does offer a ride along the river, follow the signs from Highway 6 to Riverbend Park. There is a short, paved trail that winds through the park, as well as restrooms, a water fountain and playground equipment, so it's a great place to take young cyclists. The disc golf course offers another outdoor option if the thighs can't take it anymore.

The signs along the route with the mileage markers make it nearly impossible to get lost, but if riders get confused, the vineyards, orchards and farm stores along the way are staffed by friendly people who will be happy to offer wine-tasting, peach sampling and directions.

Cyclists who brought their mountain bikes to the Grand Valley to check out the dirt-track trails can leave their nubby-tired bikes behind and rent a cruiser (or any other style of bike) from Rapid Creek Cycles in downtown Palisade.

With the exception of the pedestrian bridge over the river, the byway is not a bike-only path, so be prepared to share the road with cars, trucks and the occasional tractor.

The route offers a little something for everyone. Those who'd prefer flat terrain or a shorter distance can stay on the route as it tours around the vinelands area east of Palisade. Hardcore cyclists who want a challenging ride will appreciate the climb up to

PROJECT SUMMARY

Since its inception by CDA in 1999, *Colorado Proud* has served as the state's primary program to promote agricultural and food products that are grown, raised or processed in Colorado. The program is a great fit with the Colorado consumer's desire to buy local products. Surveys, as recently as September 2012, have found that more than 90 percent of Colorado consumers would be more likely to buy food that was produced in Colorado than outside of the state. The appeal for local products also lies with restaurants, chefs and retailers. A National Restaurant Association survey conducted in October 2011 found that 86 percent of chefs surveyed believe local produce is one of the "hot" new trends for restaurants.

The purpose of this project was to continue to educate consumers, retailers, and restaurants about the wide range and availability of Colorado specialty crops, resulting in increased purchasing of locally grown products. Program funds were used solely on television advertising and online components associated with promoting Colorado specialty crops. The Colorado Department of Agriculture contributed $50,000 in cash to the campaign to promote non-specialty crop products. In addition, the partner television station contributed $545,392 worth of in-kind services including bonus air time to promote the non-specialty crop portion of the advertising campaign.

PROJECT APPROACH

Approximately 1,800 companies, many of which are suppliers, processors and buyers of fresh fruits and vegetables, were participating in the Colorado Proud program when the advertising campaign with Channel 9 KUSA-TV was implemented in the summer of 2012. Project funds were utilized to continue the successful summer television advertising campaign. The television ad featured Governor John Hickenlooper in a Colorado cabbage field. Sakata Farms in Brighton provided the backdrop for the ad. The advertising was timed to coincide with harvest beginning in July and running through September 2012.

Colorado Proud ran 1,479 ads, and based on viewer tracking surveys, household advertising reach, for Colorado Proud ads only, was 99.9 percent with an average frequency of 16.1 times, resulting in 24,871,000 household impressions. Among the program's target audience, adults 25-54, reach and frequency totaled 99.5 percent an average of 8.4 times, generating 13,784,000 target audience impressions.

In addition to the on-air campaign, Colorado Proud had a dedicated section on the www.9news.com website featuring recipes, a crop calendar, produce picking tips and other consumer information. Online campaign impressions totaled 68,980,419.

Findings from telephone surveys conducted by Survey USA of consumers in the Denver metro area found that 81% of consumers are aware of the Colorado Proud logo, up from 76% in 2011, 68% in 2010 and 59% in 2008, and 64% indicated they are looking for the logo when shopping more now than they used to (up from 58% in 2011). The survey also found that 81 percent of consumers had knowingly purchased at least some Colorado products in the prior 30 days.

GOALS AND OUTCOMES

MEASUREABLE OUTCOMES

Desired Outcome	Performance Measure	2012 Goals	Actual Result				
			2008 (Baseline)	2009	2010	2011	2012
To increase consumer awareness of Colorado Proud	The percent of targeted consumers aware of the Colorado Proud logo as measured by a telephone survey	72%	59%	67%	68%	76%	81%
To increase consumer purchasing of products grown, raised or processed in Colorado	The percent of targeted consumers reporting purchases of Colorado products in the prior 30 days as measured by a telephone survey	87%	77%	84%	84%	84%	81%
To increase the number of companies licensed to participate in the Colorado Proud program	The number of Colorado Proud license agreements on file with CDA	1,769	1,050	1,160	1,392	1,570	1,808

BENEFICIARIES

Besides impacting consumers across Colorado, the television advertising and online communications brought broad benefit to the more than 1,800 Colorado companies that are licensed members of Colorado Proud, especially the more than 150 members that are specialty crop producers and the nearly 400 members that operate restaurants, retail stores and farmers markets selling Colorado specialty crops. (No SCBGP dollars were used to promote non-SCBGP products.)

LESSONS LEARNED

The success of this television advertising campaign continues to astound us. We were projecting a slowdown in awareness growth, but were pleasantly surprised at the significant increase in awareness from 2011. It is interesting to note that since we started the Colorado Proud television advertising efforts in 2003, awareness of the Colorado Proud logo has increased 30%.

Although the percentage of people purchasing at least some Colorado products was lower than expected, 81% is still a strong figure and shows the support Coloradans have for buying local products. Other promotional efforts scheduled for 2013 will hopefully help increase this number in future years.

As a result of the successes of this campaign, CDA secured non-specialty crop funding from the state to work with a public relations firm to develop a year-round and statewide marketing plan for October 2012 through September 2013. The focus of this new endeavor will be on public relations, social media and retail merchandising to promote Colorado Proud products year-round across the state.

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COLORADO PAVILION AT THE FRESH SUMMIT EXPO & INDUSTRY PROMOTION
FINAL REPORT

PROJECT SUMMARY

The *Colorado Pavilion* at the PMA show provides the most cost efficient and effective means to help our produce growers enhance their market competitiveness, as well as maintain and expand their current customers and sales. The Colorado Pavilion began in 2008 and is now an ongoing marketing initiative with increasing participation of Colorado's produce industry and as a focal point for the promotion of Colorado produce to the U.S. and international markets. Colorado's produce industry is the sixth largest sector and represented $414 million in farm income in 2012. Produce production also represents the highest potential income per acre of irrigated crops in Colorado agriculture. Maintaining and increasing this sector is critical for Colorado's agricultural industry.

The primary objectives include:

- Supporting our produce growers by creating an expanded venue to promote their individual production and sales.
- Demonstrating to the Colorado produce industry the benefits of marketing under a broader umbrella of "Colorado" to expand their customer's acceptance of Colorado as a produce state.
- Assisting our exhibiting companies to expand and/or initiate export sales by "Internationalizing" their domestic trade show presence.
- Increasing the awareness of produce buyers throughout the U.S. and the world of Colorado as a produce supplier state.

The 2012 Colorado Pavilion at PMA's Fresh Summit was a continuation of the efforts from 2008 which were also funded by grants.

The goals of the *Colorado Pavilion* project are; to increase sales for each of the participating growers, increase the US and international awareness of Colorado as a produce region and provide support and assistance to the participating commodity groups. While immediate sales are the best outcome, a more realistic objective is to increase the contacts Colorado producers establish with buyers in the U.S. and global markets. Other objectives include increasing the U.S. and global industries' perception of Colorado as a "produce' state, and fostering future cooperation of the Colorado produce industry to look at future joint trade promotional opportunities.

PROJECT APPROACH

The 2012 initiative included the Colorado Pavilion for the 2012 PMA Fresh Summit Trade Show in Anaheim California included creating the Colorado Pavilion within the trade show, coordinating Mexican and Japanese buyers to meet with Colorado Pavilion exhibitors and organizing a mission of produce industry representatives to visit key produce buyers on the U.S./Mexico buyer, who are responsible for purchasing the majority of U.S. produce exported to Mexico.

PMA Pavilion

- We maintained produce associations at 4 groups in 2012.
- We increased our produce growers with booths by 1 to 7 producers and continue to recruit new companies.
- Our outcome goal of sales is a challenge to accurately track. The show is connecting companies for the next full year, so post show surveys cannot reflect the full impact of the show. Immediate results indicated sales of $1.5 million.
- The Colorado Pavilion provided a critical venue for the Rocky Ford Growers Association, a new association focused on assisting the Colorado cantaloupe growers in recovering from the 2011 listeria outbreak.
- The project continues to use videos highlighting Colorado's produce industry at the Colorado Pavilion, produced from a previous SCBGP grant.
- We hosted Japanese and Mexican produce buyers at the 2012 Colorado Pavilion.

- Contributions and role of project partners in the project

    - The participating commodity groups and industry representatives paid for their booths and travel for the staff to participate in this Pavilion. Booth rental costs, build out and materials for the show and travel for their staff is projected at over $120,000. The value is excluding placing an in-kind value of the staff time in preparing for and participating in the show.

GOALS AND OUTCOMES ACHIEVED

- Performance measures baseline table illustrating baseline data that has been gathered to date and showing the progress toward achieving set targets.

- In the expected measurable outcomes chart above our initial tracking was based on the estimated number of contacts (unique buyers) who would visit the Colorado Pavilion engaging in meetings with a majority of our exhibitor's. We have found that a more accurate way to gauge results is to track the total number of one to one meetings. The larger result number reflects this revised performance tracking matrix. Our matrix next year and going forward will be amended to reflect this.

- In April we conducted our first Border mission to Tijuana, Mexicali and El Paso. The mission was very successful. Mission members report new sales consisting of 23 Loads valued at $324,000.00 in a six month period. Additional benefits included: Meeting and strengthening relationships with existing customers. Follow on sales generated by new customers. Mission members also benefited from a better understanding of trade issues on both sides of the border. A separate performance table is included for this element.

Desired Outcome	Performance Measure	Baseline	Goals		
			2011	2012	2013
To increase the number of participants exhibiting at the Expo	The number of produce associations participating in the Colorado Pavilion	3 produce associations participated at the 2010 Expo	4	4	4
			Result	Result	Result
			4	4	N/A
To generate domestic and international sales	Value of *"at Expo"* sales reported by produce growers and companies participating in the Colorado Pavilion	*"At Expo"* sales of $800,000 were reported at the 2010 Expo	Goal	Goal	Goal
			$850,000	$850,000	$900,000
			Result	Result	Result
			$1,500,000	$1,150,000	N/A
To increase contact information for key importers/distributors	Number of contacts	*N/a*	Goal	Goal	Goal
			10	10	15
			Result	Result	Result
			94	272	N/A

Additional performance table for mission to Mexican Border

PERFORMANCE MEASURES	2013 BENCHMARKS	2014 TARGET	2014 ACTUAL
1) Increase # of participating Colorado companies	6	8	
2) Number of companies visited and educated on Colorado Produce	9	12	

BENEFICIARIES

- The Colorado Pavilion targets assisting two core groups, the produce commodity associations and the individual produce shippers/growers (those who can actually write an order).
    - The produce association participation represented four associations, which now represent 57.6 percent of total vegetable production in Colorado
    - The shippers/growers represented seven shipper/farmer groups. Growers with booths at the show now represent the majority of national and international shippable vegetables sold in Colorado:
        - Onions
        - Potatoes
        - Seed potatoes
        - Sweet Corn
        - Melon
        - Dry beans
        - Seeds

    - The table in Goals and Outcomes Achieved define the impact for companies. The associations feel the make critical contacts and the companies report contacts and sales. Their continued participation in this pavilion illustrates their benefits, since each company pays for their booth space and travel for the event; minimally $5,000 per exhibitors.
    - In the expected measurable outcomes chart above our initial tracking was based on the estimated number of contacts (unique buyers) who would visit the Colorado Pavilion engaging in meetings with a majority of our exhibitor's. We have found that a more accurate way to gauge results is to track the total number of one to one meetings. The larger result number reflects this revised performance tracking matrix. Our matrix next year and going forward will be amended to reflect this.

- Company and association support grew in 2012 with participating commodity groups and industry representatives paying for their booths and travel for the staff to participate in this Pavilion. Booth rental costs, build out and materials for the show and travel for their staff is projected at over $120,000. The value is excluding placing an in-kind value of the staff time in preparing for and participating in the show.

- In April, 2013 CDA conducted the first Border mission to Tijuana, Mexicali and El Paso. The mission was very successful at a cost of $21,872.14 we generated new sales consisting of 23 Loads valued at $324,000.00 in a six month period. That is an ROI of: 15:1 in visible trade to this date. Other trade benefits included: Meeting and strengthening relationships with existing customers. Follow on sales generated by new customers and a better understanding of trade issues on both sides of the border.

LESSONS LEARNED

- We have all the associations representing many of our large, US and global market crops participating. The smaller associations have not seen value for their association to invest in participating with a booth within the Colorado Pavilion. We will continue to pursue other associations as they indicate their industry sees benefit in future participation.
- Grower participation is also stabilizing at the current level. We will continue to recruit other grower/handlers, but feel that this current level appears to be the base for this show.
- We will continue to work on developing a more effective and meaningful post event survey that captures pertinent data to judge and direct future Colorado Pavilions.
- The industry targeted a food giveaway as do the many companies at show site. The food giveaway consisted of Colorado breakfast and lunch burritos featuring Colorado potatoes and onions. In addition there were recipe cards distributed with the recipes. This feature did not draw companies to other booths within Pavilion and provided less impact than anticipated. More emphasis on a direct tie in to Colorado is needed for next year and a better execution which will incorporate all of the booths within the Colorado Pavilion, as in the past with certain food giveaways.

- The Border Mission was particularly effective in connecting our shippers with Mexican produce buyers. The industry has expressed interest in additional missions to the other border regions active in buying produce for the Mexican market, especially in view of the increasing likelihood of the Mexico market opening further for U.S. potatoes.

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PROJECT SUMMARY

Despite years of promotion by the Colorado Wine Industry Development Board (CWIDB, an agency of the Colorado Department of Agriculture), including 20 years of popular wine festivals, many discerning wine consumers are still unaware that Colorado makes wine. Though local press does focus on the industry, endorsements from national sources generate credibility for Colorado wines and consequently increase consumer consumption.

The Drink Local Wine Conference is a unique opportunity to attract the attention of several dozen key wine writers from across the country, and several local writers, to generate tremendous online exposure and momentum for Colorado wines. At the 2010 conference in Virginia, the *Twitter Tasting* alone created exposure for Virginia wines to more than 4,000,000 people. Bringing the conference to Colorado and the media attention that comes with it is not something that can be accomplished through media familiarization trips or simply by sending wine samples to writers. This is a one-time opportunity to spread the word about Colorado wines through the most successful, timely and cutting edge media outlet currently available. The conference allows the media and public to *experience* Colorado wine.

The first public event for the conference was an in-store tasting of Colorado wines, held at Westminster Total Beverage on Thursday afternoon, April 26, 2012. It served as a local media kick-off as well as introducing Total Beverage customers to the local wines they might not have tried.

The main Drink Local Wine event was held in Saint Cajetan's Event Center on the Auraria Campus with the assistance of Metropolitan State University of Denver on Saturday, April 28, 2012. The morning consisted of a series of panels and seminars focusing on the regional wine movement in general and Colorado wine in particular. Lunch featured a blind comparative tasting of similar wines from Colorado and California, and the afternoon was a Twitter Taste-off with 22 Colorado wineries. That event drew the largest attendance, 250 people, of any DLW conference to date.

The Colorado Wine Industry Development Board hosted an overnight plane trip for 5 writers to the Grand Valley and West Elks AVAs (Paonia and Palisade) prior to the conference and another overnight for 5 writers after the conference. The CWIDB with the funding support of the Colorado Tourism Office's Agritourism Committee also presented a welcome dinner for national and local media at the Governor's Residence on Friday, April 27, 2012 for 90 people.

DLW also offered a bus tour for participants to Denver and Boulder wineries on Sunday, April 29. About 20 media participated, followed by a dinner hosted again by the CWIDB.

DrinkLocalWine.com is a web portal created by wine journalists from *The Washington Post* and *Fort Worth Star Telegram,* whose mission is to educate consumers about emerging US wine markets. In order to generate national and local exposure for Colorado's wine industry the CWIDB sponsored and hosted the 2012 Drink Local Wine Conference in April 2012 along with the Colorado wine trade association, the Colorado Association for Viticulture and Enology

(CAVE). Social media and the internet are increasingly vital elements of wine promotion and this conference is one of the linchpins in expanding national and local media familiarity with Colorado wines, resulting in greater sales of Colorado grapes, fruit and honey (used in the production of wine), an increase in agritourism to regions producing wine, and greater local acceptance of Colorado wines through outside endorsements.

PROJECT APPROACH

Social media, blogging and the Internet are increasingly replacing more traditional marketing avenues as print advertising and PR. Wine consumers look more to friends' recommendations and Twitter for wine information and recommendations than they do to printed reviews such as the Wine Spectator.

Additionally, the national wine writers (especially in the traditional press) still focuses heavily on California and the established wine producing regions of the West Coast. Attention to emerging wine regions, such as Colorado or Missouri, comes mostly from local writers and bloggers and others on the Internet. Consequently, Drink Local Wine, a collective of new technology media contributors, is the ideal group to bring new attention to a relatively unknown region such as Colorado.

Any national attention paid to Colorado wines helps to focus the local media on what is available in their own backyard. It brings a new level of credibility to local wines that local writers may not see because they are too close to the industry. DLW not only proved to the local writers that local wines are competitive in the national market and deserve their attention, but also created new connections between local and national writers.

The first goal was to make the Colorado experience memorable and unique. That is why we selected the Governor's Residence to hold the Media Welcome Dinner. The Boettcher Mansion is an architectural gem that impressed both the locals and the visitors. The chefs that prepared the meal, Daniel Asher of Root Down and Linger in Denver, and Eric Skokan of the Black Cat Farm Bistro in Boulder, both seek out unique preparations to showcase local and fresh ingredients. The menu included many named local producers and featured wines selected by the chefs to pair with their food:

Dandelion Greens and Windsor Dairy Glendevey Tart
Braised Goat Tacos with Raquelita's Tortillas
Bookcliff Vineyards (Boulder) Grand Valley Dry Muscat Blanc 2010
Cottonwood Cellars (Olathe) Colorado Lemberger 2008

Early Spring Harvest Salad with English Pea Ice Cream,
Goat Marscapone and Pimenton de la Vera Cotton Candy
Settembre Cellars (Boulder) Grand Valley Chardonnay 2009
Creekside Cellars (Evergreen) Grand Valley AVA Rosé (Cinsault, Mourvedre, Cab Sauv) 2011

Tasting of Black Cat Farm Pork Three Ways
with Smoked Cabbage, Raisins and Mustard
Guy Drew Vineyards (Cortez) Russell Vineyard Montezuma County Riesling 2010
Anemoi (Palisade) Grand Valley AVA Zephyrus 2010
50% Petit Verdot/50% Grand Valley AVA Cabernet Franc

Dessert Board featuring Lioni Chocolates and local cheese
Whitewater Hill Vineyards (Grand Junction) Grand Valley AVA Riesling Ice Wine
The Winery at Holy Cross Abbey (Cañon City) Colorado Divinity, Merlot 2010

Holding the DLW conference activities on Saturday at Saint Cajetan's provided a sense of Colorado history, as it is an historic landmark left over from the city of Auraria, now within Denver and home to three universities. Our proximity to the Metro State University's Hospitality Program and their students' involvement in the event, brought attention to one of the state university system's most comprehensive and perhaps least know culinary programs as they prepared to open the new Hospitality Learning Center at the Springhill Suites Hotel in August.

The seminar panels, organized by the DLW leadership, focused on the unique climactic challenges facing Colorado as well as the broader challenges of spreading local wines into the retail tier of distribution and general consumer apathy toward local wine:

> **Colorado's Terroir and the Challenges of High Altitude**. Moderator: Richard Leahy, national wine consultant. Panelists: Steve Menke, PhD, Associate Professor of Enology, Colorado State University; Horst Caspari, Professor & State Viticulturist, Colorado State University; Bruce Talbott, Talbott Farms.
>
> **Local Food, Local Wine, and Why They Don't Like Each Other**. Moderator: Dave McIntyre, Washington Post and co-founder DrinkLocalWine. Panelists: Rene Chazottes, Pacific Club, Newport Beach, Calif.; Evan Faber, Salt, Boulder; Jensen Cummings, Row 14, Denver.
>
> **Consumer Perception of Colorado and Regional Wine**. Moderator: Rich Mauro, Colorado Springs Gazette. Panelists: Jay Leeuwenburg, Colorado Academy; Jennifer Broome, Fox 31; Chris Anthony, Chris Anthony Adventures.
>
> **Colorado Blind Challenge**. Moderator: Wayne Belding, MS.

The Blind Challenge, moderated and organized by noted Master Sommelier Wayne Belding, who is also local, included a panel of local and nationally recognized media, many of whom have been reticent to embrace local wines. Nevertheless, Colorado wines surprised many by winning the Viognier shoot out against a California wine twice as expensive and edging out a California Cabernet Franc that was 50 percent more expensive. Colorado narrowly lost the Riesling competition to California.

The Twitter Taste-Off is the signature event of the DLW conference each year. The idea is that all of the media and the consumers attending tweet about each wine as they taste it. As this year's conference set an attendance record for the Twitter Taste-off (over 200 consumers plus over 40 media) the views of the tweets and re-tweets were significant. Media attendees included:

- Joe Roberts of www.1winedude.com and Playboy on-line, named one of the top ten wine bloggers in the country
- David White, www.terroirist.com, also one of the most respected wine bloggers in the country
- DLW founders Jeff Siegel, www.winecurmudgeon.com, and Dave McIntyre with the Washington Post and dmwineline.wordpress.com
- Kendra Anderson, Westword and www.denverswirlgirl.com
- Amanda Faison, www.5280.com
- Plus food and wine writers for the Denver Post, Colorado Springs Gazette, Grand Junction Sentinel, Denver Life and Edible Front Range

Consumer impressions generated by these closely-followed media, in addition to the friends and social networks of the consumer attendees, exceeded expectations by approaching three million.

Tangentially, since there were so many national media in Denver to attend the DLW conference, the CWDIB offered to pay the airfare of select writers to Denver if they stayed over through May 1 to help judge the Governor's Cup competition on April 30. Six attendees from outside Colorado accepted this offer.

GOALS AND OUTCOMES

The primary goal of the project was to produce a successful conference and elevate the awareness of Colorado wines. That was achieved and exceeded.

MEASURABLE OUTCOMES

Desired Outcome	Performance Measure	Baseline (from previous conf.)	Goal 2012	Actual 2012
To increase local exposure for Colorado wines	Number of Colorado website and social media impressions	252,140 (2nd Quarter 2011)	20% Increase	Due to a programming glitch that was not discovered until late September 2012, all web visitation data was lost. Therefore, this method of tracking the impact of Drink Local Wine in April of 2012 by comparing website visitation is not possible. See new "Facebook" measure below.
To increase local exposure for Colorado wines	Facebook Activity			July 19-December 21, 2011: 19,910 July 19-December 21, 2012: 25,030 April 26-June 30, 2012: 21,229
To increase online exposure and credibility for	Number of Drink Local Wine.com website and	4,000,000 (VA in 2010)	5 million	2.5 million - 8 million

Colorado wines	social media impressions			
To increase level of local awareness of Colorado wines	Number of Public Participants	100 (average of previous 3 years)	150	200

We can compare Facebook activity from 2011 to 2012, with the restriction that Facebook records do not go back beyond July 19, 2011. So we have the following comparison, which although it does not cover the precise period following DLW, it does show a significant bump in Facebook Daily Total Reach, meaning "the number of people who have seen any content associated with [our] page." Facebook statistics reveal that in the final two quarters of the year, total reach for Colorado Wine increased in 2012 over 2011 by nearly 26% with the daily average up over 27%. During the two month period immediately following Drink Local Wine, the total Facebook Reach was almost as much as during the last six months of 2012, with a daily average 97.5% over the last six months of the year. Drink Local Wine could be seen to have doubled the Facebook Reach for Colorado Wine.

The DLW organizers found evidence of close to 8 million impressions from the Denver conference, but the CWIDB tally put the number at 2.5 million. The difference is primarily based on the threshold for an impression, vs. just a brief mention and how one tracks re-tweets. While the estimated range of actual impressions is wide, we are satisfied if we only got 2.5 million impressions. The quality of the comments and high praise generally given to the wines from Colorado certainly opened the eyes of many of those 2.5 million people. The impact would be akin to having 2.5 million of your close friends (a Twitter user generally only follows people they know or trust) tell you over and over again that you should try Colorado wines.

There is no way to definitively link the impacts of DLW to wine sales, but at least coincidentally, the volume of wine that Colorado wineries report to the Colorado Department of Revenue for excise tax payments since April of 2012 has hit a record high for two out of the five months and tied with previous highs in two other months.

BENEFICIARIES

Beside the direct impact for the 22 wineries that poured at the Twitter Taste-off of exposure to new customers and the publicity received from national and local media, the Colorado wine industry in general received new attention from national writers which energize local attention.

While the connection between the increased exposure generated by Drink Local Wine to the record setting wine reports mentioned above is mostly likely coincidental, the increased sales of Colorado wine does indicate successful attempts to introduce Colorado wines to consumers. Likewise, it is impossible to say whether the travelers' that voted Palisade, CO into tripadvisor.com's 2012 Top Ten Winery Destinations in the United States, announced in October, did so because of any of the blogs they may have read from media tours associated with Drink Local Wine, there is obvious benefit coming to Colorado wineries from media attention.

Increased sales of Colorado wine brings a direct benefit to Colorado grape growers. Anecdotal statements from Colorado wineries suggest that at least 80% of wine made in the state comes from Colorado grapes. Due to some exceptionally severe winter events in December of 2009, the 2010 grape harvest did force a slight increase in the use of out-of-state grapes by wineries that would normally use all Colorado fruit. In a typical year, very few if any Colorado grown grapes go to wineries in other states. Nevertheless, a stronger market for Colorado wines means a stronger and more consistent market for Colorado grapes.

LESSONS LEARNED

Hosting Drink Local Wine introduced the Colorado wine industry to a new approach to public wine tastings. The model of the Twitter Taste-Off adds a new dimension of impact to a simple public wine tasting: thousands of Twitter followers can experience the tasting "electronically" even if they are not there in person. The wineries that participated in DLW felt it was so beneficial that they want to recreate the event on a local level. While we might never be able to assemble a group of national writers with such a large following and sphere of influence without the support and infrastructure of a national association, such as Drink Local Wine, this approach to a public tasting expands its impact greatly. Namely, 250 people actually attended the Twitter Taste-Off, but 10,000 times that number experienced the wines vicariously through the attendees' tweets and recommendations.

Perhaps the most important lesson learned was not to over-schedule an event. Organizing and leading the pre- and post-conference tours for 10 writers stretched CWIDB staff and resources to the limit. And although we were not directly involved in the implementation of Saturday's event, CWIDB's Research and Outreach Coordinator Kyle Schlachter served as the moderator for the Twitter Taste-Off and attempting to oversee the Governor's Cup wine judging the day after the DLW Conference pushed staff beyond the limit of functionality. Even though the synergy of taking advantage of the six DLW media attendees already in Denver to judge the statewide winemaking competition both elevated the judging panel's caliber and pumped more dollar resources into bringing media into Denver for the DLW event by using other pools of money, it took a toll on the staff's mental health and the overall attention to detail for the competition. The lesson: do not overreach with event planning just because you might save some money or resources.

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ADDITIONAL INFORMATION

Thursday, April 26-Friday, April 27: pre-conference Western Slope winery tour for about six writers attending DLW. Photo at left is pre-conference tour at Carlson Vineyards, Palisade. Links from that trip include: http://blog.terroirist.com/?p=10000&tw_p=twt

Friday, April 27: Welcome dinner at the Governor's Residence Carriage House with the key media from in and outside Colorado; with Commissioner Salazar and Deputy Chief of Staff Kevin Patterson, who spoke.

Kristin Browning-Blas of the Denver Post posted: http://blogs.denverpost.com/food/2012/04/28/drink-local-wine-underway-denver/8414/

This also marked the release of three videos made for the CWDIB including one with the Governor, included in this post by Dave McIntyre: http://dmwineline.wordpress.com/2012/05/01/colorado-guv-plugs-the-states-vino/

Link to the Governor's video on YouTube: http://www.youtube.com/watch?v=ih-2YhS_84Q&feature=plcp

Left: Jeff Siegel of winecurmudgeon.com emcees media dinner.

Saturday, April 28: Drink Local Wine Conference and Twitter Taste Off (below right, at St. Cajetan's on the Auraria Campus) breaks attendance records for this conference with nearly 250 people. Seminars in the morning (below right: Colorado Terroir with moderator Richard Leahy of VA, Bruce Talbott, former CWIDB chair and Grand Valley AVA grower, Dr. Steve Menke, state enologist, and Dr. Horst Caspari, state viticulturist). Generated almost 3 million social media impressions through blogs, tweets and other posts.

See these links:

- Evan Faber of Salt Bistro, Boulder on featuring local wine on their wine list: http://www.youtube.com/watch?feature=player_embedded&v=WnV3Fyd57RU

- Summary of blog posts and articles: http://www.drinklocalwine.com/dlw-2012-what-the-media-said.html

- Joe Roberts, named as one of the top national wine bloggers, comments about Colorado wine: http://www.1winedude.com/why-do-local-wine-and-local-food-hate-each-other-a-late-dispatch-from-dlw-2012/

- Dave McIntyre in the Washington Post: http://www.washingtonpost.com/blogs/all-we-can-eat/post/local-wine-conference-reaches-peak-in-colorado/2012/05/01/gIQAppJNuT_blog.html

- Richard Leahy reporting on the Twitter Taste Off winners: http://www.richardleahy.com/2012/05/01/winners-of-co-wine-competition-announced/

Sunday, April 29: Front Range winery bus tour as part of DLW for about 20 writers

Sunday, April 29-Monday, April 30: post-conference Western Slope winery tour for another six writers.

Jake Harkins (pictured on the very left in the photo) of localwinos.com: http://colorado.localwinos.com/2012/05/co/wine/news/drinklocalwine-trip-western-slope-changed-wine-perspectives.html

Toni Dash, boulderlocavore.com: http://www.boulderlocavore.com/2012/05/lifestyle-winemaking-in-colorados-north.html

April 30: Governor's Cup/American Wine Society Colorado winemaking competition at University of Denver HRTM School. 19 judges including local professionals, three Master Sommeliers, AWS Board members, and several writers attending DLW, judged 254 Colorado wine (below) and awarded 1 double gold medal, 12 gold, 77 silver, and 103 bronze

FEASIBILITY OF COMMERCIAL PROCESSING OF OLATHE SWEET CORN
FINAL REPORT

PROJECT SUMMARY

Olathe area grown sweet corn has developed a reputation as the best fresh market sweet corn available during the summer months and is marketed in more than 30 states during the growing season. Consumers enjoy a combination of sweetness, flavor and tenderness which are unique to this product.

Home freezing of Olathe sweet corn is a common local practice which allows people to enjoy Olathe grown sweet corn year around. We were asked to evaluate the feasibility of replicating this home style product. The goal of this project was to determine the economic feasibility of commercial freezing of Olathe grown sweet corn without compromising its quality reputation.

Olathe-grown sweet corn is a significant source of revenue for the area. By being able to process the sweet corn, the market would expand. Jobs would be created to support the processing, which would benefit the economy of the entire Western Slope.

We found that traditional mechanization of the handling and cleaning process would bruise the tender varieties produced by Olathe growers. Husking and de-kerneling are the most labor intensive steps in the entire cleaning process. Mechanization of these steps will require modification of existing equipment to handle tender Olathe varieties.

Our evaluations of the frozen Olathe grown product show that flavor, taste, texture and overall performance is superior to existing frozen commercial sweet corn products. We did not detect differences in consumer opinion between Olathe grown varieties during the season.

Net Present Value Analysis (NPV) showed that freezing Olathe grown sweet corn has potential to be profitable if fixed costs can be minimized, raw product obtained at a reasonable cost, and a high-end market is developed. The market price of Olathe grown sweet corn will have to be higher than anything on the currently available to make any venture profitable.

PROJECT APPROACH

This project was conducted in three phases: processing, evaluation and economic analysis. The first phase was conducted from May 2012 to September 2012. The second phase was conducted from July 2012 to March 2013. The final phase of the project was conducted from September 2012 to February 2013.

In order to determine the feasibility of commercially freezing Olathe-grown sweet corn, a processing protocol needed to be established. Olathe sweet corn growers, Mesa County Department of Health, local chefs and Colorado State University food scientists were consulted. Tests were conducted on each part of the process and refined. The final protocol was determined by commercial food safety standards and available equipment, labor and time. The final processing protocol was as follows:

1. Received 8 cases (2 lots of 4 cases each) of sweet corn from Olathe packing sheds
2. The raw product was weighed
3. Remove the husks and silk
4. Rinse the corn on the cob
5. Remove the kernels
6. Weigh the kernels
7. Package into plastic bags
8. Vacuum seal the bags

9. Blanch the corn
10. Freeze the product in blast chiller
11. Store the corn in holding freezer
12. Discard the organic waste
13. Clean the kitchen

Kernel yield and waste data was collected each week from twelve ears of corn from each lot that were set aside to partition kernel, cob and husk weight. Yield of the frozen cut kernel corn was calculated by weighing the finished product and dividing by the weight of the raw product.

Both cut-corn and on-the-cob corn was processed. The final product was evaluated for color, texture, sweetness, flavor and overall performance. It became clear that as a result of the processing, the kernels of the on-the-cob product were soft. It was decided that the on-the-cob product would not live up to the Olathe-grown reputation and did not evaluate it any further.

A series of taste tests were conducted to determine product quality. They were performed in conjunction with social groups, non-profit organizations, local chefs and the interested public. The bulk of the product was distributed to the public in Delta, Montrose and Grand Junction for in-home testing. A portion of the product was given to CSU Food Science students for sensory evaluation, recipe development and beer brewing.

Finally, an economic analysis was conducted to discern profitability. We used a Net Present Value Investment analysis model created by Rod Sharp, CSU Extension Agricultural Economist, to evaluate economic scenarios. Net Present Value Investment Analysis is a standard method for using the time value of money to appraise long-term projects. This type of analysis accounts for time series of cash flows, both incoming and outgoing, which allowed us to run different economic scenarios

The project partners initiated the project when they asked about the feasibility of processing their product. They provided funding, raw product for processing and extensive knowledge of home freezing and the economics of the sweet corn industry.

GOALS AND OUTCOMES ACHIEVED

All performance goals were met through the three phase strategy. The goals were:

1. Freeze product for evaluation
2. Collect processing data
3. Evaluate the product with taste tests
4. Investigate costs of building a processing plant
5. Integrate all data collected into an overall economic analysis
6. Create a feasibility study final report, public presentation and document

Using the process described in the "Project Approach" section, 8 cases of sweet corn were processed once a week for an 8 week period. The yield for the entire 2012 sweet corn season was around 500 lbs of frozen cut corn and nearly 600 ears of frozen corn on-the-cob.

Every week during processing, data was collected. Each case was weighed to get raw weight. One case was used for an on-the-cob frozen product, and the other three cases used for cut kernel product. Twelve ears were taken from one of those cases to determine the composite weights of cob, husk and kernels. This data was used during the economic analysis.

The finished product was distributed and evaluated in a series of taste tests. These included public distribution at the Mesa County Combined Services Facility, Mesa County

Health Department, Bill Heddles Recreation Center in Delta and the Montrose Public Library. Group evaluations were conducted with the Grand Junction Rotary Club, a Grand Junction social club, Child and Migrant Services of Palisade dinner group, CSU Food Science students, a public evaluation at WCCC Chez Lena restaurant and the attendees of the Tri River Extension-sponsored Uncompraghre Ag Workshop. Samples were also given to chefs at locally owned fine dining restaurants in Mesa, Delta and Montrose counties. Evaluation forms were distributed to the various groups and the data was compiled and analyzed.

NPV analysis shows that processing Olathe grown sweet corn has the potential to be a profitable investment. The profitability and investment return of commercial processing of Olathe grown sweet corn depends on four major factors:

- The initial investment cost (capital expenditures).
- The cost of raw product (Olathe Sweet Corn).
- The cost of labor.
- The sale price of the processed product.

A small scale production model that would process one ton of raw product per day was used for this analysis. This would equate to about 550 pounds of frozen product per day.

The first key factor that determines whether processing is profitable is the cost of the commercial kitchen facilities, processing equipment, and any other capital expenditures necessary to begin processing. These costs can vary substantially depending on each situation. For example, kitchens can be purchased or rented. Processing equipment can be purchased new or used. For this study the initial investment cost was estimated to be approximately $100,000. This included:

- Modular Commercial Kitchen $38,000
- Mechanization $55,000
- Other Equipment $7,000

The second key factor is the cost of raw product. Bulk purchasing of Olathe Sweet Corn was estimated to be approximately $0.70 per pound of final product.

The third key factor is the cost of labor. It was determined that the processing protocol would require at least 3 full time employees and additional part-time help. The full-time wage rate was estimated at $15.00 per hour. This rate includes workman's compensation, and payroll taxes. This equates to approximately $5,000 per worker per season or $1.50 per processed pound of corn.

The fourth key factor to determine profitability is the sale price of the product. This study documents that frozen Olathe sweet corn is a premium quality product and can justify a higher wholesale market price. A $3.00 per pound wholesale price was used in the analysis.

The final report on the feasibility study was presented at the 2013 Uncompahgre Agriculture Workshop, held in Delta, CO on Tuesday, March 5, 2013. Forty individuals attended the workshop of which half were directly involved in the local sweet corn industry and 12 were sweet corn growers. There are 30 individuals who grow commercial sweet corn in the Olathe area, so 40% were present at the Mar 5, 2013 meeting. The results have also been presented at meetings of the Grand Junction Rotary, Tri River Area Extension Advisory, and Colorado West Sweet Corn Market Order. Five more growers, 8 county commissioners from four counties, and more than 125 others were in attendance for the presentations. A document was produced describing the project and its implementation. It is available on-line at http://wci.colostate.edu.

BENEFICIARIES

The Olathe sweet corn growers and associated community now have hard data regarding the quality of their product. They also have a clear idea of the costs, methods and equipment associated with small-scale commercial processing of their sweet corn. In addition the growers became aware of the challenges of maintaining their high-quality standards after the mechanization of the husking and de-kerneling process.

Many entities benefited from association with the project. These include students and faculty of the Culinary Program at Western Colorado Community College, students in Food Science and Human Nutrition at Colorado State University. Other beneficiaries are local residents and chefs who participated in the sensory evaluation of the sweet corn, the Tri-River Area county health departments and State Department of Public Health and Environment who investigated and learned the complexities of commercial sweet corn processing.

The primary economic benefit of this project lies in dollars not lost in an uncertain investment. We learned that the limitations of maintaining the quality required by the Olathe grown reputation significantly affects production costs. By preventing a risky business start-up, the economy that relies on the Olathe grown sweet corn industry remains sustainable.

Overall, the entire Olathe sweet corn industry benefited indirectly from this project. No one is motivated to build a commercial processing plant, which would be a high risk venture at best. The industry leaders can focus on what they do best - producing high quality fresh market sweet corn. Two of the three marketing companies had expressed interest in exploring the feasibility of commercial processing, and both benefited directly from the results.

LESSONS LEARNED

A frozen product utilizing Olathe-grown sweet corn has color, flavor and texture superior to products currently available in the marketplace. The positive consumer opinions were consistent across evaluation types and sweet corn varieties.

Olathe-grown sweet corn is expensive to process because of low kernel yield, high labor requirements and expensive raw product production cost. To be profitable, mechanization of husking and de-kerneling will be required. A small-scale processing facility would be relatively easy to set-up because of minimal mechanical needs compared with large-scale processing facilities.

Food safety control points need to be considered when developing a commercial food processing operation. These control points are fewer in frozen sweet corn than for other processed food products.

Unless a reliable high-end market for Olathe-grown frozen sweet corn can be identified, commercial processing is not feasible.

The project was straightforward with the results confirming the hypothesis. There weren't any significant positive or negative experiences as a result.

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PROJECT SUMMARY

This project continued to provide educational materials and opportunities to promote an understanding of Colorado's specialty crops to children and educators. The educational materials and activities highlighted nutrition, food safety and "buy local" concepts for Colorado specialty crops. The projects addressed the problem that today people are generations removed from the farm or ranch and are lacking knowledge about the source of food. People generally do not know which crops are grown in Colorado, much less which crops are specialty crops. Many people either have not eaten these crops or are not aware that they have eaten them.

Each year a new crop of students enters a new grade. These students are three to four generations removed from the land. They no longer have a parent, grandparent, aunt or uncle involved in agriculture. Less than 5% of the information in school textbooks is related to agriculture. Agriculture illiteracy is becoming the norm for these students and unfortunately, for their teachers as well. This project provided current information about Colorado's fruit industry for use in 4th, 5th and 6th grade Colorado classrooms. This issue was published and distributed in March 2012. If we want students to understand their connection to agriculture then it is important to provide resources to educators so they can teach their students about this industry.

This project consisted of statewide educational outreach effort to work toward developing an understanding of the importance of specialty crops to the state; provide current, accurate information about these crops; and to encourage their use in menus through three primary initiatives: 1) the Colorado Reader, 2) the 2012 National Ag in the Classroom Conference, and 3) "Colorado Kids." Each of these projects encouraged their audiences to "buy local." Resource lists were provided to consumers to find, buy and try local Colorado specialty crops. The fruit industry was the focus of this year's outreach project in the Colorado Reader and Colorado Kids program.

This project built on and enhanced previously funded projects. The previous projects focused on an introduction to specialty crops, followed by focusing on vegetable crops grown in Colorado, then the green industry. They involved the production of a Colorado Reader on Specialty Crops, Veggies of Colorado and Colorado's Greenhouse Industry. This year the focus was on fruits grown in Colorado. All of these segments were displayed at the 2012 National Ag in the Classroom Conference.

PROJECT APPROACH

This project was comprised of three major components: 1) Producing and distributing 55,000 copies of the Fruit Reader across the state, 2) Hosting the 2012 National Ag in the Classroom Conference in Loveland and 3) Producing an edition of the Colorado Kids on Fruits of Colorado that was distributed via *The Denver Post* to approximately 300,000 households.

Contributing partners included: *The Denver Post* – printed and distributed the Colorado Kids insert; CFA staff – researched, wrote, typeset, arranged for printing and packaging for mailing of the Reader, its teacher's guide and evaluation; CFA staff – promoted the use the Colorado

Reader to schools; CFA staff – compiled evaluations; Colorado Department of Agriculture – reviewed content; Western Region Ag in the Classroom – planning for the 2012 National Ag in the Classroom Conference

The Fruit Reader Program activities included: research, writing and typesetting the Fruit Reader, teacher's guide and evaluation. In correlation with the Colorado Content Standards, the reader helped students to achieve several standards. The Reader was reviewed by various fruit growers and Colorado Department of Agriculture before it was printed, packaged and distributed. 57 packets were distributed to the Cooperative Extension, 1585 packets to subscribing schools, 45 packets to libraries, home schools, museums, and the remainder was distributed to farm day events, educator conventions, corn mazes and other events.

The 2012 National Ag in the Classroom Conference activities included: Develop content, speakers and tour stops; Pre toured the tour stops, coordinate tour hosts, and tour stops; Develop distributed promotional brochure via mail and electronically; Arranged for CSU continuing education credit, busses and facilities; Hold the conference; Graded attendees' projects

The Fruit Issue of the Colorado Kids included: Research, write and typeset the Colorado Kids, Provide to The Denver Post

MEASUREABLE OUTCOMES

Desired Outcome	Performance Measure	Baseline	2011	2012 Goal	Actual
To educate students about specialty crops grown in Colorado, and identification of the crops	Percent of teachers reporting that the Reader was beneficial to helping students understand what fruits are grown in Colorado, identify fruits as part of the ag industry and at least one job	75%	80%	85%	87%
To positively enhance the general public's understanding of Colorado specialty crops	Percent of online visitors that visit for fruits quiz answers that correctly recognize fruits as part of ag industry and identify at least 4 crops	No baseline existed in 2010	90%	90%	90%

To provide NAITC attendees with an understanding of the diversity of Colorado's ag industry while introducing them to different segments such as the specialty crops industry	Percent of NAITC attendees that understand specialty crops as part of Colorado ag and the economic impact; development of activity they can use in the classroom	No baseline currently exists	N/A	90%	90%

Evaluations sent in by teachers reported that:

- 87% of the students could identify 4 fruit crops grown in Colorado;
- 98% knew that fruits were a good snack choice;
- 96% recognized that physical activity is a healthy lifestyle choice;
- 82% could describe the seasonal progress of a fruit crop; and
- 90% could identify a beneficial insect essential for a good fruit crop.

For the National Ag in the Classroom Conference we set up display areas about various specialty crops and the greenhouse industry. In addition three of the eleven tours focused on visiting specialty crop operations. Two other tours tour at least one specialty crop operator during the day.

The greenhouse tour visited Gully's Greenhouses, CSU horticulture research and Jordan Floral. It's overall score from participants was 4.15. The next tour visited CSU Specialty Crop program, CSU ARDEC research facility and Grant Farms. It received 4.3 score from participants. The third tour visited Fagerberger Farms, Petrocco Farms, Sakata Farms and Berry Patch Farms. It received a 4.7 score from participants. Evaluations of the tours were based on a 1 to 5 scale with 5 being the highest.

Comments from participants showed that they learned about the importance of water to Colorado agriculture, the problems with hail ~ many had never heard of hail cannons ~ and the diversity of Colorado agriculture.

BENEFICIARIES

Groups benefiting from this project included:

- 45,000 4^{th}, 5^{th}, 6^{th} grade students from across the state
- Attendees of the 2012 National Ag in the Classroom Conference
- General Public

In assessing the impact, the 2012 National Ag in the Classroom Conference registrations (425, of which 411 checked-in) and included representation from 47 states represented, plus District of Columbia, American Samoa and Canada including the provinces of Manitoba, Newfoundland and Labrador, Nova Scotia, Ontario and Saskatchewan (US states *not* represented: Delaware, Hawaii, Rhode Island)

LESSONS LEARNED

Perhaps the most important lesson learned was that we had underestimated the amount of work and commitment it takes to host a first-class national conference. Aside from that realization, the project was largely carried out as planned and in alignment with expectations.

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ADDITIONAL INFORMATION

Colorado Reader Link: http://www.growingyourfuture.com/civi/colorado-reader

Final Report: Develop and Deliver Model Training Programs for Market Garden Business Incubator Participants in Southwest Colorado
Partner Organization: Fort Lewis College, Durango, Colorado

Project Summary

Fort Lewis College (FLC) developed model training programs for Market Garden Business incubator participants in Southwest Colorado. The project increased the chance of success for new produce farmers who participated in previous FLC courses by presenting hands-on practical experience through market garden incubator plots at the FLC Field Station. It provided the infrastructure for new farmers to start their own agricultural enterprises.

Project Purpose

The Old Fort at Hesperus is located on 6,300 acres approximately 17 miles southwest of the main campus in Durango. Its vision is to maintain an interdisciplinary facility for education, research, and community partnerships in sustainable agriculture, cultural, natural and physical resources. The site has served as a meeting place for the agricultural community since the early 1920s when it was an educational institution (Fort Lewis College) and continued as a Colorado State University Agricultural Experiment Station from 1956 until June, 2010 when Fort Lewis College returned.

The southwest region of Colorado offers a mixture of rural lifestyle, a strong interest in local sustainability and a wide range of socioeconomic populations. According to data from www.city-data.com, when comparing the three surrounding counties, LaPlata County has the largest population and highest adjusted gross income, the highest median house price and the lowest amount of harvested vegetable acres. With the higher incomes in LaPlata County, the market for locally produced vegetables has been documented at a very successful Durango Farmers Market (http://www.durangofarmersmarket.org). Additionally, the tourism industry in the region offers farmers additional markets at locally owned restaurants.

However, the average price for La Plata County land for sale is currently $124,679 per acre, based on 8 properties available for sale in La Plata County on LandAndFarm.com (visited 3/28/2011). Historically, the average price of land for sale is $107,517 per acre, making the average price 16% more than the Colorado average. Contributing to the high cost of land for new farmers is lack of appropriate soil types and the availability of irrigation water, making it difficult for them to begin producing vegetables. In addition to high land prices, new farmers in LaPlata County face a challenging climate for growing vegetables. For their long term viability, these new farmers need access to good land, water and appropriate training and mentoring. Following a national idea, there have been a few success stories in the region related to the Land Link concept. However, these were mostly established growers that had the experience to make

the land productive the first year. After completing one or more years in the market garden incubators at the Old Fort, new farmers should be more successful on their own land.

The success of several local programs indicate that there are young entrepreneurs who are excited about vegetable production and would be interested in participating in a program that would not only give them access to land but also provide them with the training to be successful.

In the Fall of 2010, Fort Lewis College received a private donation to establish a 6.5-acre agricultural incubator project at the Old Fort. The selected site was historically used by faculty and staff as the school gardens when the property was a high school and junior college (1911-1956). Initial soil tests indicated ideal conditions for vegetable production and irrigation water was readily available. The donation was used to build a wildlife fence and convert the irrigation system for small plot production.

The Old Fort at Hesperus provided the land, water and infrastructure for new farmers to start their own agricultural enterprises. The incubator program offered an alternative point of entry for beginning farmers and provided them with access to support services to enable them to develop the skills necessary to succeed. This program served as the culmination of programs offered in Southwest Colorado including the Colorado Building Farmers, the Growing Partners Apprenticeship program and the Field Techniques in Agriculture course. This program not only increased the amount of vegetables produced, but also improved the quantity and viability of new farm enterprises in southwest Colorado by providing technical training, financial incentives, business development and market support to new farmers enrolled in the program.

Project Activities

Met with key personnel to develop and implement farm incubator concept. The project team utilized email, conference calls and personal meetings to make decisions on promotional materials, curriculum content, fee scales, application development and finally, incubator selection. The team was very dedicated to the project and continued to provide input to the project director and make themselves available to assist farmers. We have a LISTSERV that includes project team, current and former incubator farmers. It has been an excellent way to communicate activities and issues. During this time the project director joined the National Incubator Farm Training Initiative (NIFTI) from Tufts University and was given access to a wide variety of resources from both new and existing programs. It has been an invaluable resource for the project director during the development of the Old Fort Market Garden Incubator.

One of our tasks was to develop a fair and sustainable fee structure for our participants. We decided to charge one fee that included access to land, water, communal equipment, shared infrastructure and educational programs. Research of other incubator models show our fees are slightly higher but they are reflective of our higher land cost and availability of reliable irrigation water. While many local farmers had their irrigation water cut off on July 1, 2013, our incubators had water until September.

2014 Fees

$50 non-refundable acceptance fee

Plot Size	Year 1	Year 2	Year 3	Year 4
1/8 acre	$125	$250	$375	$500
¼ acre	$250	$500	$750	$1,000
½ acre	$500	$1000	$1500	$2,000
1 acre	$1,000	$2,000	$3,000	$4,000

**** 1st payment of fees due May 15th; 2nd payment due August 15**

Additional resources were made available to farmers at a nominal cost since not all of the participants utilized them equally.

Additional resources:
BCS/Tiller: $20/hour, not including gas
Root cellar: $50/bay/month
Walk-in Cooler: $25/month

Because the Old Fort at Hesperus is owned by the State Land Board and managed for the benefit of Fort Lewis College, all non-FLC users must have insurance when using the property. It would have been cost prohibitive for individual farmers to purchase insurance, so the project director contacted Rocky Mountain Farmers Union about forming a service cooperative to provide insurance. With their assistance, the Old Fort Market Garden Cooperative was registered in June, 2013 with incubator members serving as officers. Since it is a separate entity, the San Juan Resource Conservation and Development Council serves as the fiscal agent for a nominal 7% fee. They collect membership and insurance payments from individual farmers and pay for the insurance. As the program grows, the cooperative could be used for marketing products if needed. In 2014 the required membership and insurance fees were as follows:

Cooperative membership fee: $25/year
Share of general and product liability insurance policy:
1/8 acre: $164
1/4 acre: $193
1 acre: $364

Utilized pilot plots/trial incubator to learn more about growing space. We made the decision in 2010 to have two years of a "trial incubator" prior to opening the project up for applications. Because it was a new growing site, this decision definitely contributed to the success of the project. Mike Nolan, who served as the trial incubator, served as the project's mentor for new farmers. During this time, we were able to finish the wildlife fence, irrigation system and determine what other types of infrastructure were needed. He grew a variety of crops but primarily focused on root crops because of our short growing season.

During this trial period we were able to develop a reliable irrigation system by installing an overhead system using impact sprinklers and stands that can cover approximately 1/8 of an acre by adjusting the heads. This overhead system was used on one acre while another two acres were irrigated using gated pipe. We worked with NRCS to determine the amount and direction

of the slope in the field. Because the plot of land had been flood irrigated while it was a hay field, it worked quite well.

As we transitioned to individual growers in 2013, we installed 3/8 of an acre of drip irrigation since one of our farmers wanted to grow cut flowers. In 2014 we made some major changes to the irrigation system to accommodate the growing needs. We extended the drip system to ½ of an acre that consists of four 1/8 acre zones and installed an electric pump. Additionally, we converted one acre of the flood field to an overhead system to better utilize the space for the submitted crop plans.

Developed and delivered educational curriculum for high altitude production at Old Fort. Another key element to our production success has been the winter education series that is required for all farmers. In 2013, the project team and selected incubators met for three hours a week for nine weeks covering the following topics:

Date	2013 Topics
29-Jan	Business Plan Development; Incubator Logistics; Liability Insurance
5-Feb	Crop Planning/Marketing
12-Feb	Soil Basics/Crop Culture/Seeds and Transplants
19-Feb	Draft Business Plan due
	Recordkeeping/Enterprise development
26-Feb	Soil Fertility/Cover Crops
5-Mar	Irrigation Basics
12-Mar	Weeds/Pests/Season Extension
19-Mar	Harvesting/Post Harvest Handling/Food Safety
26-Mar	Final Business Plan presentations

In addition to delivering educational material, this time also built comradery among the farmers. When they transitioned to the field, it was very evident that they felt comfortable with each other, were willing to help each other and problem-solved together. In addition to topics listed on the original project, we included Business Plan development and were fortunate enough to have Dr. Dawn Thilmany-McFadden come to Durango and work with our farmers. We encouraged the farmers to utilize Ag Plan (https://www.agplan.umn.edu/) to develop and share their plans. Even with all of these resources, it was challenging for the farmers to develop a working and realistic plan. In 2014, we covered the same topics but altered the order to provide a more logical flow.

Date	2014 Topics
27-Jan	Welcome to the Program; Incubator Logistics; Q & A
3-Feb	Crop Culture/ Seeds and Transplants
10-Feb	Business Plan Development
24-Feb	Draft Business Plan due
	Marketing /Crop Planning
3-Mar	Soils/Soil Fertility/Cover Crops
10-Mar	Irrigation Basics/Weeds & Pests
17-Mar	Season Extension/Recordkeeping
24-Mar	Harvesting/Post Harvest Handling/Food Safety
31-Mar	Final Business Plan presentations

To complement the educational series, each year, beginning farmers were provided with a copy of Teaching Organic Farming and Gardening as well as Teaching Direct Marketing and Small Farm Viability from the Center for Agroecology and Sustainable Food System. The project team used their expertise to create PowerPoint presentations and handouts for each of the winter training sessions. In 2014, we added homework assignments from the provided resources to better prepare the students for class.

We tried to archive the winter training presentations so incubators could review them if needed. Camtasia Studio was used to create recordings since it creates a webinar type document that can be uploaded to YouTube. The Old Fort at Hesperus YouTube channel was utilized to upload a few of the sessions, but because each of our sessions was approximately three hours long with questions and discussion, the large files were cumbersome to upload. Our plan was to edit them to make them more concise but it has been very time consuming and has not been completed.

A resource library was created in the Old Fort office building. It contains a notebook with printed *Growing for Market* newsletters, all of the class handouts and resources as well as several of the books recommended by our winter workshop teachers.

Provided farm incubators with basic field equipment and harvest. While some of our farmers had growing experience, this was the first time that they had worked on their own, so they came to the project with little to no personal tools and supplies. The project provided each farmer with a rake, shovel and hula hoe. We also provided communal equipment (irrigation pumps, drip tape, emitters, rasps, and weed eaters) along with a harvest shed (wash tubs, salad spinner, hoses, scale, stainless steel tables and sink) for their use. A BCS tractor and tiller was available for producers to use on an hourly basis. Each participant was responsible for purchasing seed, transplants and additional growing supplies. At the end of the season, the project supplied cover crop seed for each plot.

We are fortunate to have a root cellar built in the 1920s that worked as short-term cool room and fall/early winter storage for root crops in 2013. This space was available for $50/month and was utilized through December by three farmers. During the winter of 2014, we obtained a 12’ x 12’ walk in cooler that is available to the farmers for $25/month. This has definitely increased the shelf and marketing shelf life for all of the crops produced. We also purchased marketing supplies in bulk and sold them to participants in smaller quantities.

Hosted three field days/open houses. We hosted three open houses (2012, 2013 and 2014). The first one was used as a recruitment tool to introduce people to the project while the others were used to highlight the current farmers. They were held during the peak of the growing season and were well attended (20, 30, 36, respectively).

Utilized several different types of recruitment. Initially, we utilized existing programs (FLC Field Class, FLC Internships, Building Farmer and Apprenticeship) but found that we received more applicants from media and personal contacts. In addition to scheduled activities, we hosted many tours with Extension groups, garden clubs, youth groups and university personnel.

Distributed applications and selected participants. Once the application was developed in fall 2012, several methods of recruitment were utilized including flyers, PSAs, LISTSERVs and media articles. After our first open house, we created a list of potential incubator contacts. There are currently 40 people on the contact list who were sent emails for on-site activities and the application packet, and will continue to receive such notifications in the future.

In 2013, we received 13 completed applications to evaluate. While we asked that a business plan be attached to the initial application, none of them submitted a viable plan. At this time, we decided that completing a business plan would be part of the winter training. Without a viable business plan, applications were evaluated on previous experience, reality of proposed crop plan and perceived ability to be successful. Once we selected nine incubators for 2013, we used similar criteria to award acreage (1/8 to 1 acre) to each successful applicant. Because we only had 1 acre of overhead irrigation, some participants received acreage on both the overhead field and the flood field based on their proposed crops.

In 2014, we created a re-application document for returning farmers that included their updated business plan, profit/loss from previous year and an opportunity to make suggestions for our improvement. Two applications (four farmers) submitted reapplications requesting double the acreage they had in 2013. We received four new applications (five farmers) that were evaluated on similar criteria and awarded acreage. Based on proposed crop plans, we decided to increase the amount of drip irrigation available and convert one acre of flood to overhead.

Each year, all applicants were notified via email of our decision. Unsuccessful applicants were offered the opportunity to increase their skill level by serving as an apprentice with Gabe Eggers or using a scholarship to take the Backyard Food Production class. Successful applicants were sent an acceptance form which they returned with their acceptance fee. All applicants who were accepted began the winter training.

In 2012 and 2013, with the help of our Americorp VISTA, we included a small 1/16 acre plot in the field that was used to grow crops for quarterly food distributions. We provided over 1,200 pounds of produce for the September Produce Bounty event. In 2014, we decided to expand the plot and our County 4-H agent became involved in the planning and management of the plot. They participated in winter education and spring training. With the guidance from our 2013-14 VISTA volunteer, they developed an opportunity for 4-H club members near the Old Fort to assist with planting, weeding and harvesting. They also created a system to distribute produce to rural families that has been very successful.

Offered winter education series. In addition to delivering the education curriculum, we used this time to discuss administrative topics such as site guidelines and insurance requirements. It

also provided an opportunity for farmers to share their developing business names, logos and crop plans. In 2014, we opened the class up to a pair of farmers who had taken over a co-housing garden and hoop house. We were interested in how "outsiders" would integrate into the class series since it could be a potential income generator for future years. We were very pleased with how all of the potential farmers interacted with each other.

Hosted spring work days. Following the winter education series each year, we hosted two spring work days. The first day was to introduce the farmers to the property, their incubator plots and the irrigation systems. Since the Old Fort staff plows/discs the field each spring, we were able to flag off the plots. In 2013, we set up the entire irrigation system prior to the work day and spent most of the time showing them how to use it. We found that the farmers did not know how to trouble-shoot the system and it required much more of our time later in the season. Therefore in 2014, the farmers assisted with the construction of the new drip and overhead systems and we have had less issues with maintenance.

In addition to training on using the gas and electric water pumps used for irrigation, incubators were introduced to the BCS tractor and tiller. As a refresher, we hosted an equipment maintenance mini-workshop during the season. Additionally, standard operating procedures related to using the three different irrigation systems were distributed. For beginning farmers, the education series and work days provide so much information that it was hard for them to absorb it all. We required our returning farmers to attend the series again and they made several comments about how much they learned the second time.

Provided farm incubators with in-field mentorship. Our program is different than other incubator projects because we decided to provide in-field mentorship. Fortunately, our mentor for 2013 was Mike Nolan, the trial incubator, so he had in-depth knowledge of the irrigation system and field specifics like weed pressure and pest control. He also assisted with the winter education and work days so the farmers felt comfortable with asking him an inordinate amount of questions. Because he was also one of the incubators, he was on site and available for questions. Mike kept a log of who he mentored and what topics they covered. As expected, those incubators with less experience spent more time with the mentor but overall, we used fewer hours than anticipated. Additionally, most of the time was spent during the initial establishment of the plots with another spike once the crops began to mature.

In 2014, Mike had moved to his own farm approximately 30 minutes away but still continued to serve as an educator and mentor. He assisted with the work days, scheduled on-site days and

completed walk-through reports that were shared with the producers. However, because he wasn't on site every day, many of the questions came to the project director and the returning farmers. I believe we still provided good quality mentorship this year but we will return to the on-site mentor model in the future. It is possible that returning farmers could be compensated for the time they spend with new farmers.

Significant Contributions and Role of Project Partners

Beth LaShell - As project director, I developed original documents for application, acceptance, site guidelines, fee structures and equipment operations. We used some templates available through the New Entry National Incubator Farm Training Initiative (NIFTI) wiki and participated in their webinars. This initiative (http://nesfp.nutrition.tufts.edu/resources/nta.html provided technical assistance from some of the more established incubator programs and in September, 2013 NIFTI hosted a field school in Minneapolis for incubator managers. I received a scholarship from NIFTI to cover registration and led a discussion group on site management.

In spring 2013, I worked to establish a service cooperative so the incubators could purchase a general and product liability insurance policy. This involved working with Rocky Mountain Farmers Union who put together the legal documents and Wolcott Insurance who created the policy. While the incubator farmers serve as officers, I will continue to complete legal requirements such as registering with the state and filing income tax.

I met individually with each incubator in June to finalize crop plans and receive input on how the program was going. As a result of those meetings, a spreadsheet that all of the incubators could use to report their monthly production by crop was developed. This information was imported into Access to summarize each farm's data, individual crop data and overall totals. It was during these consultations that they expressed an interest in more help with taxes, obtaining marketing supplies and managing their time.

Gabe Eggers - Assisted with incubator selection, developed and delivered educational materials for winter classes, assisted with product marketing and irrigation systems.

Mike Nolan - Assisted with incubator selection, developed and delivered educational materials, initial field setup, coordinated hands-on work days, designed and installed drip irrigation system. Mike was also the in-field mentor. Major topics he has addressed with incubators included irrigation systems, weed management, equipment operations, post-harvest handling and product marketing.

Darrin Parmenter - Assisted with incubator selection, developed and delivered educational materials for winter classes, advertised and promoted via his Colorado Master Gardener and Backyard Food Production participants. He has also assisted producers with disease identification and management.

Goals and Outcomes Achieved

1. Increase success rate of producers interested in vegetable production

Performance Measure	Goal	2012-13	2013-2014
Incubator applications	15	13	11
Incubator Participants	10	9	10

When developing the application in 2012, we purposely made the application very long to make applicants put some effort into it. The length probably reduced the number of applicants we received but increased the quality of those applicants. In 2012, we received requests from 33 people for application packets and that number increased to 40 in 2013. For 2013, we developed an application for returning farmers that was due prior to the new applications. Four of the seven farmers who completed the 2013 season reapplied. The three remaining 2013 farmers transitioned to land they purchased with two of the three actively farming in 2014. We need to develop a post-program survey to gather information from the farmers that have graduated from the program.

We have received several inquiries in the spring of the year just before the growing season but do not plan to change the application timeline. Completion of the winter education series has proven to be a vital step for our success and selecting incubators in the spring would not allow us enough time to deliver the educational program. These people were added to our database and will receive an application for the next growing season.

2. Utilize Building Farmer, Growing Partner Apprenticeship and FLC Field Class to recruit applicants

Performance Measure	Goal	2012-13	Goal	2013-2014
Building Farmer Applicants	5	4	5	2
Apprenticeship Applicants	8	4	5	2
Field Class Applicants	2	2	5	2

Since 2011, there have been many changes to the "feeder" programs that we planned to use for recruitment. The Building Farmers class has not been taught the past two winters but we hope to have a fall/winter 2014 class in the region. The apprenticeship program has been so successful for Twin Buttes that they have hired many of their apprentices for their Gardens. Lastly, the Fort Lewis College field class has not been offered since the summer 2012 term when the agriculture program was discontinued. That being said, we have utilized other methods including media, open houses, public service announcements, personal contacts, Fort Lewis College programs and existing farmers. We encourage potential incubators to visit during the growing season to see the project and perhaps that has been a deterrent for some applicants.

While the Old Fort Market Garden Incubator program serves as an alternative entry point for new farmers, the Old Fort Educational Gardens serve as a training ground for interns and volunteers. The project director worked with six and eight interns in 2013 and 2014, respectively, and hosted classes from the Environmental Studies summer field school. These relationships could increase applicants in the near future.

3. Provide incubator participants with classroom training

Performance Measure	Goal	2012-2013	Goal	2013-2014
Attend Crop Planning class	100%	100%	100%	100%
Attend Intro to Soils, Soil Fertility and Cover Crops class	100%	100%	100%	100%
Attend Transplant Production and Irrigation basics class	100%	100%	100%	100%
Attend Recordkeeping, Vegetable Post-Harvest Handling and Food Safety class	100%	100%	100%	91%
Attend How to Direct Market Farm Products class	100%	100%	100%	91%
Attend Capital Resources and Enterprise Development class	100%	100%	100%	91%
Attend Weed and Pest Management class	100%	100%	100%	91%
Attend Vegetable Diseases class	100%	100%	100%	91%

The class topics selected have provided a well-rounded education for growing and marketing specialty crops. Not all topics have received equal time. Those that are required for developing crop plans have received the most attention. All farmers (new and returning) are required to attend these sessions.

We began our second year by hosting a potluck that included 2013 and 2014 farmers. After dinner we hosted a question and answer period where the seven farmers who completed the first year were able give the new farmers a real-world perspective. This potluck will be an annual event since the farmers who were on their own for the first time this year have some great insight to share.

4. Provide incubator participants with hands-on training at worksite

Performance Measure	Goal	2012-2013	Goal	2013-2014
Attend Irrigation Systems workshop	100%	90%	100%	80%
Attend Season Extension workshop	100%	90%	100%	80%
Attend Equipment for Small Farms workshop	100%	80%	100%	80%
Attend Implementing your crop plan for successful marketing (one on one)	100%	80%	100%	100%

While two hands-on work days give us the opportunity to cover many topics, it is not enough time. There need to be more mini-workshops during the growing season. For example, we talk about post-harvest handling and food safety in March when no one has any product, so these topics need to be

revisited. Scheduling these types of trainings are more challenging because most of our farmers are also working a full-time job.

Our goal was 100% participation in spring trainings. Since three of our farms had two owners, we required at least one of them to attend the trainings.

5. Provide program awareness to regional specialty crop producers and community and increase interest by hosting farmer field days/open houses

Performance Measure	Goal	2012	Goal	2013	Goal	2014
Community Attendance	15	20	25	30	35	36

The Field Days served as a way for us to introduce potential incubators to the project as well as the community. It also served as an excellent opportunity for media promotion. In 2013, the Durango Herald completed a story on the project and in 2014, Inside Durango TV filmed a segment for their weekly program. In addition to these public field days, we hosted numerous private tours for groups such as the County Commissioners, San Juan College Horticulture Department, Garden Clubs, State Land Board, as well as Fort Lewis College classes and clubs.

6. Mentor successful incubator participants

Performance Measure	Goal	2012-2013	Goal	2013-2014
Season Completion	80%	77.7%	100%	100%
Increase availability of locally grown vegetables.	1000 lbs	22,923 lbs 181 qt pots 240 two inch cells 5800 stems	1500 lbs	As of Aug 15, 2014 2082 lbs 1718 Stems
Increased marketing efforts of locally grown vegetables	500 lbs	22,923 lbs 181 qt pots 240 two inch cells 5800 stems	1000 lbs	As of Aug 15, 2014 2082 lbs 1718 Stems

For the 2013 season, we selected nine producers who completed the in-class winter training (100%), but only seven of them completed the season (77.7%). At the end of the training, one young producer decided that she had overextended herself and did not have the financial resources to complete the year while the second farmer had to withdraw for health issues resulting from an accident. For the 2014 season, we selected 11 producers

with 10 (91%) of them completing the winter training and 100% of those completing the season. We easily met our goals for specialty crops grown and marketed from the Old Fort Market Garden Incubator. Because of our high altitude and short growing season, producers generally do not begin harvesting until early July. In 2014, several of the producers installed frost cover and we did see some greens production in late June.

Compared to 2013, the 2014 season to date production is up 23% from last year. Given the crop plans, we anticipate we will produce more than the 22,923 pounds from last year. In 2013, there were 52 different specialty crops produced with these top five:

2013 Top Crops		
Crop	**Unit**	**Total**
Potatoes	Pounds	7,861
Beets	Pounds	5,320
Zucchini	Pounds	3,581
Carrots	Pounds	3,448
Onions	Pounds	708

The initial production goals were based on pounds because we didn't anticipate having a flower producer in our inaugural class. These numbers are more difficult to quantify since Linger Flower Co. markets cut flowers, bouquets, potted flowers and starts.

Marketing local product is one of the topics that we will continue to work on with the incubators. Each year, they are so concerned about crop plans and weeding that they do not pay attention to marketing large amounts of product. In order to assist them with sales, the project director has been buying produce to supply restaurant accounts and the Old Fort Farm Stand. Individually, the producers are selling to restaurants, participating in the Durango, Bayfield or Mancos Farmers Market, and some of the more experienced producers have contracts with Durango School District to supply them beets, carrots and potatoes.

Beneficiaries

This project definitely benefited the 13 different beginning farmers who needed an alternative entry point to reach their goal of producing specialty crops on a commercial scale. Simply put, without this program they would not be farming. The Old Fort Market Garden Incubator program allows these fledgling farmers to learn how to grow food in an environment that provides a safety net. We provide the mentorship and infrastructure so they can concentrate on growing and marketing. Because of this support, 77% and 100% of farmers completed the 2013 and 2014 seasons, respectively. An additional benefit has been the personal growth and maturation of the farmers. The project team has seen them grow tremendous amount of product and then become business people to market it. It has been a very rewarding experience for all of us. In 2014, two of our

farmers were invited to provide product for the Colorado Proud luncheon in Denver. They met with media and Colorado Department of Agriculture officials, providing them with information about the program.

The Old Fort Market Garden Cooperative is currently just a service cooperative providing insurance but it could provide the framework for a marketing cooperative as well.

The Old Fort at Hesperus has been an important part of the community for over 100 years. In addition to attending open house events, the community has been instrumental in the success of the 4-H Giving Back garden plot. They have benefited from the availability of local produce in an area that has limited water resources. We hope to recruit more participants who live near the property and could benefit economically from the project.

The most significant beneficiaries of this project have been those who purchase and consume local specialty crops. This includes individuals, restaurants and schools. While it is difficult to estimate the number of individuals reached, the 24,641 pounds of produce and over 8,000 flower products that have been marketed in the region so far would not have been available without this project. The OFMGI project has proven that given the appropriate resources, specialty crops can be produced in large quantities.

Lessons Learned

The project team definitely knows that we have been a part of something very special in the development of the Old Fort Market Garden Incubator project. There are so many lessons to learn when you begin a new project from both an administrative and participant perspective.

As the project director, I would recommend that anyone starting an incubator program ease into it like we did. With the increasing demand for these types of programs, the tendency is to get land and immediately start accepting farmers. There are so many variables that need to be addressed in the first year of operation, so take your time and do it right.

We thought we would have more applicants for the project but have appreciated the opportunity to grow at a slower pace and work out the kinks in the system. If your infrastructure isn't in place, the farmers will get frustrated and there are enough obstacles in that first year. Some observations about our participants:

- Even if they had experience, they have not grown on large scale
- Very few of them had any tools, harvest supplies or marketing materials
- They underestimate the amount of time it takes for harvesting and weed control
- Most of them live at least 20 minutes away
- They have to learn how to work with the other incubators on watering and harvesting

From a manager standpoint, become involved in NFITI and use the resources on their website to save you time and energy. Attend their annual field school to learn from others who have started or are running programs. It is expensive to start a new program and the farmers are also investing their own time and money. As managers, we know that beginning farmers break things and probably should not be relied upon to perform equipment maintenance. Everyone thinks that someone else has checked the oil on the pump. We also recommend that you develop site guidelines that address all potential issues related to conduct, parking and food safety.

We have had amazing support from the community which has resulted in positive press and appreciation for our project. While our initial estimates for the amount of specialty crops that would be harvested were conservative, we have been able to produce and market a lot more produce. With the varied level of experience, the individual amounts produced by each farmer also depended upon crop plan.

Contact Person

Beth LaShell; Coordinator, Old Fort at Hesperus; 970-385-4574; lashell_b@fortlewis.edu

Additional Information

Information continues to be uploaded to the Old Fort at Hesperus website (http://www.fortlewis.edu/oldfort/CurrentProjects/MarketGardenIncubator.aspx)

Edible San Juan, a regional magazine highlighting local food activities: Fall, 2012 (page 5)
http://issuu.com/sunnyboypublications/docs/fall_2012
Durango Inside TV; July, 2014

http://www.youtube.com/v/7jIa0gnKxUI?version=3&start=594&end=738&autoplay=0&hl=en_US&rel=0

Durango Herald Articles:

November 12, 2012; New Farmers to work on fertile land:
http://www.durangoherald.com/article/20121109/NEWS01/121109507/0/SEARCH/Wanted:-New-farmers-to-work-on-fertile-land

September 6, 2013: Small seeds- big results
http://www.durangoherald.com/article/20130906/NEWS01/130909649/0/SEARCH/Small-seeds;-big-results?

October, 2013: http://www.durangoherald.com/assets/pdf/DU14229897.pdf

July 15, 2014:
http://www.durangoherald.com/article/20140715/NEWS01/140719742/0/SEARCH/Farm-incubator-open-house-set-for-this-month

July 28, 2014:
http://www.durangoherald.com/article/20140728/NEWS01/140729592/0/SEARCH/Open-house-for-those-interested-in-growing-marketing-crops

April 2, 2014: Gardening with kids
http://www.durangoherald.com/article/20140402/COLUMNISTS05/140409909/0/SEARCH/Gardening-with-kids

August 9, 2014: Ag Tour promotes local growers
http://www.durangoherald.com/article/20140809/NEWS01/140809567/0/SEARCH/Ag-tour-promotes-local-growers

August 27, 2014:Rooting for a farm business
http://www.durangoherald.com/article/20140827/NEWS01/140829570/0/FRONTPAGE/Rooting-for-a-farm-business

Pagosa Springs Community Development Corporation:
http://pagosaspringscdc.org/hesperus-old-fort-market-garden-incubator-program/

Facebook Pages:
Old Fort at Hesperus Facebook: https://www.facebook.com/pages/The-Old-Fort-at-Hesperus/334194983337580
Fields to Plate Produce Facebook: https://www.facebook.com/fieldstoplateproduce
Linger Flower Facebook: https://www.facebook.com/LingerFlowerCo
Mountain Roots Produce Facebook: https://www.facebook.com/pages/Mountain-Roots-Produce-LLC/248116841888109
Laughing Wolf Farm Facebook: https://www.facebook.com/laughingwolffarm

Old Fort Market Garden Cooperative:
http://www.bizapedia.com/co/OLD-FORT-MARKET-GARDEN-COOPERATIVE.html

Local Harvest Bio page:
http://www.localharvest.org/the-old-fort-at-hesperus-M63572

San Juan RC &D Annual Report (fiscal agent for cooperative)
http://sanjuanrcd.org/blog/wp-content/uploads/annual-report-4-page.pdf

Westwood One
http://blogs.westword.com/cafesociety/2014/08/colorado_proud_lunch_highlights_state_agriculture_including_fields_to_plate_beets.php

Denver Post
http://m.bizjournals.com/denver/blog/earth_to_power/2014/08/colorado-proud-luncheon-showcases-the-state-of.html?r=full

PROJECT SUMMARY

With the help of a SCBGP in FY10, Plant Select® was able to take on marketing efforts that entailed paid advertising, point of sale materials for retail partners, displays and promotions at regional trade shows and conferences outside of Colorado, plant distribution and signage for demonstration garden partners. These were ALL new activities for the program.

The FY11 funding allowed us to continue the efforts of the previous year and a half, making this in reality a three-year project. Advertising and trade show exhibitions are both activities that are difficult to track, especially in just one year. These additional funds helped us hone in on activities that we felt had measurable results. The additional funds allowed us to have another year of generous plant distributions to the garden partners, and continue to provide garden labels at no cost. These public gardens display plants in local communities helping consumers identify plants appropriate for their gardens. We were able to make our first video (an overview of the program) which is used at presentations, trade shows, conferences, etc. and has had meaningful impact on viewers. We were able to upgrade our website, including SEO to make sure consumers were able to locate our site quickly. Lastly, with these funds we were able to develop a comprehensive printed plant guide helping consumers at all levels identify plants that they want to purchase for their own projects.

PROJECT APPROACH

Demonstration Gardens

2012: At our annual meeting on June 3, 2012 we had 200 people representing 61 gardens from 5 states in attendance. 7500 plants (including trees and shrubs) and 1659 garden plant labels were provided at no charge.

2013: At our annual meeting on June 13, 2013 we had 180 attendees representing 58 gardens from three states. 3500 plants and 1300 garden plant labels were distributed. In addition, we were able to provide large, UV resistant signs explaining the purpose of the garden and the program at a break-even cost of $10 – 45 gardens took advantage of this offering. Remaining inventory will be used in future years. (see order form included)

Evaluation: The gardens are thrilled to receive these materials as most work with limited resources. Our hope is that we have really "bulked up" the gardens now, and will only need to help them fill in with new plants in coming years. They have also been able to label a majority of the plants with these funds, so again, future years should necessitate much smaller investment.

The hope is that visitors will see plants in local gardens they see as appropriate and go to local garden centers and nurseries to purchase.

Left: Attendee at plant distribution

Advertising

Print: Half page ads listing all retail members were run in a total of 10 issues of Colorado Gardener magazine using these funds. Many of our new retailers joined specifically because they wanted to be included in these listings. (Inexpensive advertising for them!) (See ad included.) We have also run half page ads in Zone 4, a food and garden magazine devoted exclusive to western gardeners. (see included)

Radio/TV: In 2012 we continued to run radio spots in Salt Lake City, UT but we were not seeing results, either in retail membership or website hits, so those were discontinued. We did continue with the Denver radio advertising on KEZW with Ask the Garden Pros, and this contract also included two interviews each summer. I am uncertain if we will continue these ads now that the grant funds are gone, but I do believe strongly that it gained us good will with the hosts and they are now much more willing to mention and even promote Plant Select® throughout their show and at outside events. I did not see direct correlation of web hits to ads or even interview appearances. Each spot and interview encouraged listeners to look for these plants at local independent garden centers.

Sponsorships

ASLA: Over the course of three years we have participated in sponsorships with six organizations. In 2012 we were a lower level sponsor with the American Society of Landscape Architects (Colorado Chapter). This sponsorship included a ¼ page ad in their quarterly publication and occasional listing on their website. There was no additional interaction on their part so we did not renew for 2013.

GCC: We were an annual sponsor for the Garden Centers of Colorado for 2012 which allowed us to have space in their monthly e-newsletters as well as a display table at two of their business meetings. In 2013 we sponsored a single meeting which was well attended and allowed me to interact with garden centers at the management level. That relationship will continue at a meeting level as we felt there was already a lot of member crossover between the two organizations.

ALCC: Annual sponsorships with the Associated Landscape Contractors of Colorado has led to numerous opportunities. We are a banner sponsor on their enewsletter (goes out to over 3000 consumers every week during the growing season); we write a "Tip of the Week" for 4 issues, which gives us the entire copy area; we have been the topic of 8 segments on 9News on Fridays at 4:30. Here is a link from the May 24, 2103 appearance: http://www.9news.com/rss/story.aspx?storyid=337916. This has been an extremely productive relationship and we will continue to work together closely in the future.

CNGA: We sponsored a total of 3 meetings with the Colorado Nursery & Greenhouse Association which allowed our name to be prominent at two Owners' & Managers' meetings and one meeting on water conservation at Northern Water (Berthoud). We will likely continue the sponsorship of the O&M meeting.

Western Landscape Symposium (Pueblo) & High Plains Landscape Symposium (Fort Collins): Both events sold out with more than 350 attendees at each. Display tables and quarter page ads were included in sponsorships. We were also able to include brochures in the event folders.

Publications

Website postcards: 10,000 postcards showing the benefits of the Plant Select® website were printed and over half have been distributed at Farmers' Markets, conferences, Extension

offices, and the state fair during the past year and a half. These were designed to direct people to the website in order to measure outcomes. (sample enclosed)

Guide to Plants Booklet: The first comprehensive "Guide to plants for Western gardens" was published in June, 2013. In just 3 weeks, over 1100 copies have been ordered and shipped! This booklet illustrates and describes all the plants currently in the program. See the brochure here: http://online.3dpageflip.com/odvo/zclu/

Brochures: grant funding allowed us to publish 45,000 brochures which are distributed through retail, wholesale and landscape professional members at no charge. These brochures are also distributed at trade shows, conferences, county and state fairs, partner gardens and at extension offices. See the 2013 brochure here: http://plantselect.org/support/publication_image.php?title=2013&photo=pdf&publication_id=21

Website SEO

Addition of critical keywords and search engine optimization was conducted through a contract with Hanna Designs. As web visits have increased dramatically, we can assume the SEO helped consumers locate our information more quickly.

POS materials

Grant funding allowed us to continue to create marketing materials for retail garden centers, including colorful bench tape and signage. (See order form included) These materials are available at cost to retailers, and when used together, they create a powerful brand experience.

Above: Retail display showing marketing materials

Travel/Trade shows

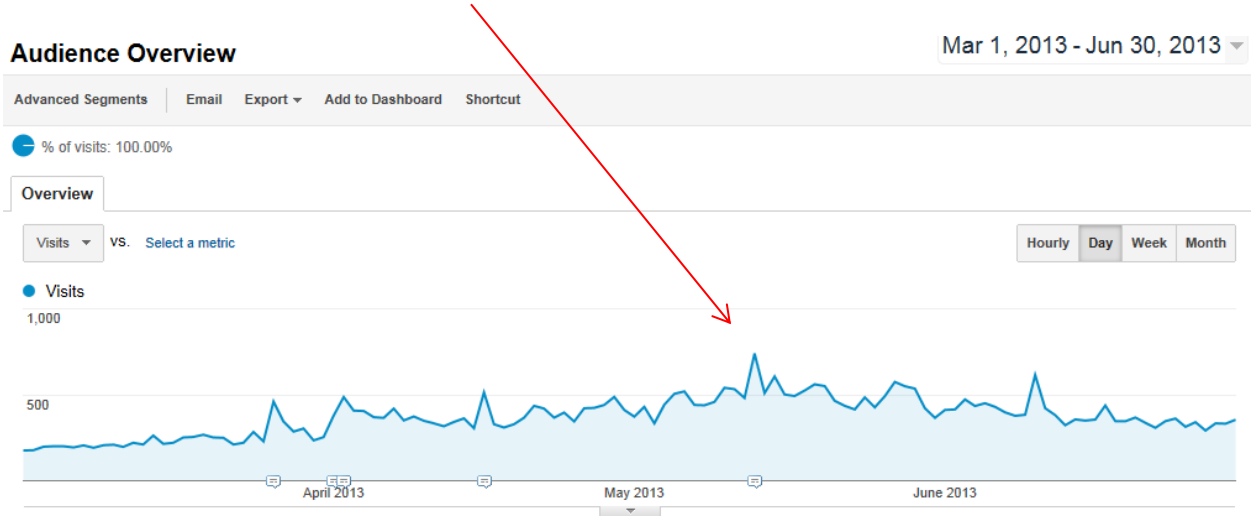
In 2011 I traveled to both the Idaho and Utah nursery shows using grant funds to pay expenses, but as the two shows are so close in time to the Colorado show, I attended just the Utah show in 2012. At both I was able to have a display booth and give presentations on Plant Select®. In 2013 Panayoti Kelaidis attended the Utah show in my place. I will continue to display at these shows, but will require reimbursement for presentations. Nothing compares to one-on-one communication!

Introductory Video

Grant funds allowed us to create our first video – see it at http://www.youtube.com/watch?v=-L4H5TsLu-E. We use this video at presentations, table displays, trade shows and have been told it is very valuable to viewers as it illustrates both visually and verbally the benefits of the program to consumers and professionals.

E-newsletters

Grant funding supported our email services. Twenty newsletters were sent out with an average open rate of 51.5% and average click rate of 29.8%. (Industry averages for non-profits are 22% and 10% respectively.) The newsletters were simple and short but had useful information and links, and all included many colorful images. Most newsletters were sent out pre-and post-season. There were significant spikes in our web views following each newsletter release (see below- each spike represents an e-newsletter mailing.) We hit our highest single day of web views on May 13, 2013 with 737 visits in a single day after releasing an e-newsletter in the height of the season.



Above: Google analytics web results Mar 1-June 30, 2013

GOALS AND OUTCOMES ACHIEVED

Desired Outcome	Performance Measure	Baseline	Goals		Actual	change
			2011	2012	July 30, 2013 final	
To increase member base (retail, wholesale and affiliates)	Track Plant Select members	38 (2009)	48	55	**62**	+29.2%
To increase nursery\landscape professional brand awareness	Track Landscape Professional members	0	6	15	21	100%
	Number of professional e-newsletter subscriptions	140	188	230	**415**	**+196%**
To increase consumer brand awareness	Track annual website hits	40,165 visits	44,181 visits	48,600 visits	**53,669 (2012)**	**+33.6 %**
	Number of consumer e-newsletter subscriptions	298	330	365	**980**	**+228.9 %**
To increase consumer demand	Track annual unit sales	1.5 million units	1.65 million units	1.8 million units	1.734 million units	+15.6%

Notes on Outcome

1. **Increased member base:** New signage, paid advertising and a well-visited website were the greatest motivators for new membership in the retail category.
2. **Increased brand awareness among Landscape Professionals:** This category of membership did not exist prior to the grant funding. Most new members came through seeing the category on the website and wanting to be listed on a site that is still averaging 300 visits/day.
3. **Increased consumer brand awareness:** All subscribers to our e-newsletter are self-subscribed through the website – we used NO automatic inputs or signup sheets. This illustrates the value that consumers put on the information and trust they have in our program.
4. **Increased consumer demand:** Even during a somewhat "down" economy, Plant Select® plant sales continued to increase. We are just in the middle of collecting the 2013 data so are not able to include the most current figures. At this point all grower reports received to date are above last year's.

BENEFICIARIES

Beneficiaries of these grant-funded projects include 20 Colorado landscape design/build companies, 54 Colorado independent garden centers and nurseries, 2 wholesale-only companies, and 23 Colorado growers and wholesalers.

LESSONS LEARNED

1. We found that exhibiting and advertising out-of -state to promote our Colorado growers was not as effective as we'd hoped. We learned that having individual and organization "cheerleaders" is essential to keeping the momentum alive. We have supporters in other states, but not true champions like we do within Colorado.

2. Even though we now have a full offering of marketing materials for retailers (signs, bench tape, banners, display cards) fewer than we'd like are using the full complement. Displays using the materials were promoted at trade shows, meetings, conferences. We will continue to educate and promote the use of these materials as studies show that dedicated brand displays are more effective than unbranded displays. The materials are now all completely cohesive, attractive and compelling.

3. We are not convinced that radio garden show audiences are our prime target audience so will not continue with these ads. On the other hand, we know we "bought" the goodwill of the hosts who are extremely involved in local/regional horticulture and that may pay off for a very long time.

4. Paid ads listing individual garden centers has increased awareness among garden centers, and hopefully has increased traffic to the shops. Now we need to figure out better ways to promote the landscape professionals. Our hope is that using the website postcards as a promotional item, consumers will see the site as a resource for multiple needs.

5. E-newsletters are a fantastic way to show quantitative outcomes, we just wish we'd had more time to get them out after June 1 this year. (The annual meeting for demonstration gardens starts taking up all our time at that point.). Our open and click rates are extremely high because of relevant, concise and compelling content. Offering web links to specific resources is extremely valued in the springtime by both professional and home gardeners. For the future we will try to have most of the content prepared ahead of time.

6. We may have underestimated the demand for plant information and are thrilled to see such enthusiastic demand for both our e-newsletters and the new plant guide. ALCC, CNGA and GCC will be promoting the guide in upcoming publications and newsletters, so we expect to sell out of the booklet by the end of next season.

CONTACT PERSON

Pat Hayward
(970) 481-3429
director@plantselect.org

ADDITIONAL INFORMATION

1. Postcard promoting our website as a resource

2. Colorado Gardener magazine ad listing retail garden center members

3. <u>Sample of ad for Zone 4 magazine</u>

4. Order form for marketing materials

Final Report: Development of Small Wonders™ Program
Prepared by Pat Hayward, Executive Director
Partner Organization: Plant Select®

Project Summary

This program, initiated by a group of Plant Select® member growers, requested funding for development of a new division for the Plant Select® program (working title: Small Wonders™) that would raise awareness and create strong consumer demand for these smaller plants. The program officially launched in spring of 2013 and has had two sales seasons to include in this final report.

Project purpose

With consumer demands for plants appropriate for smaller spaces, containers, and high altitude gardens, combined with retail sellers' demand for extended (early) season sales, locally branded programs, and increased sales, a program such as this meets demands at all levels. The ultimate purpose is to increase sales of small plants through Colorado retailers and specialty growers.

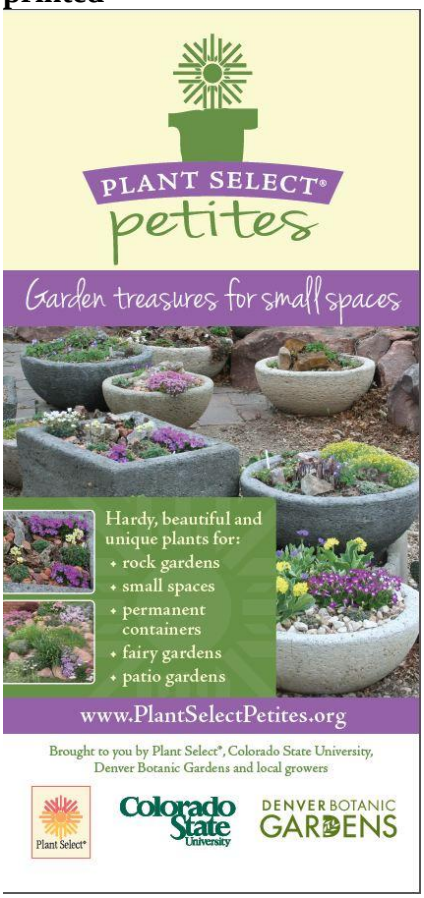
Project Activities

1. Logo and brand development: Hanna Design created the new logo and several marketing pieces. During the brand development process the official name, Plant Select® Petites was chosen.

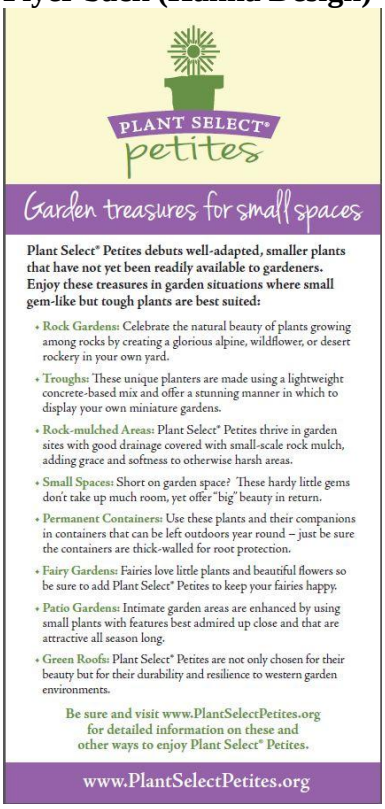
2. Flyers & Banners were developed in 2012 and distributed to all members and at all consumer and professional shows attended during 2013 and 2014.

a) Banner for Garden Centers (Hanna Design): 12 x 24” - 200 printed

b) flyer front (Hanna Design) – 10,000 printed



Flyer back (Hanna Design)



c) postcard front (Jennie Maydew) 5,000 printed

Postcard back (Jennie Maydew)

d) Guide to Western Plants (Jennie Maydew)- 5000 copies printed

New in 2013!

Beautiful, smaller-statured, well-adapted and unusual plants for rock gardens, patio gardens, permanent containers, fairy gardens and small spaces.

PLANT SELECT® petites

Learn more about these tough little gems at

www.plantselect.petites.org

including information on how to choose companion plants, making and planting troughs, rock gardening, patio gardening and more.

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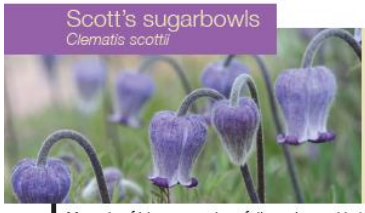
Petites

Scott's sugarbowls

Clematis scottii



Mounds of blue-green, lacy foliage, topped in late spring- early summer by nodding blue flowers. Shimmering golden seed heads follow suit. Western native.

12" x 15" | Any soil; clay tolerant | Zones 4-7

Sandia coralbells

Heuchera pulchella

Miniature version of the well-known coralbells with spikes of rose-pink bells in late spring. New Mexico native, evergreen.

6" x 10" | Loam or sandy soil | Zones 4-7

Oxlip primrose

Primula elatior

Charming but tough primrose is hardier and more adaptable than other primulas. Soft yellow flowers above pale green rosettes of foliage in spring.

12" x 15" | Any soil; clay tolerant | Zones 4-8

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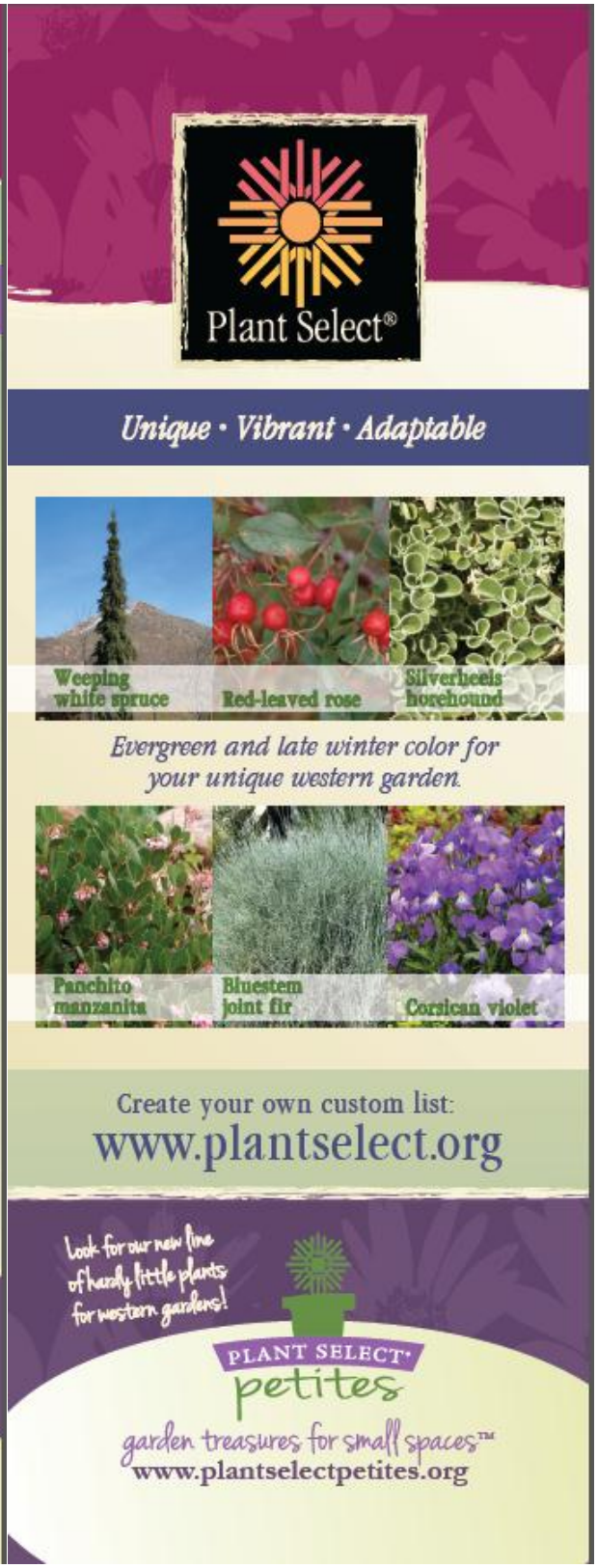
e) **Sample ads Spring, 2014 Colorado Gardener (lists all CO retail sellers) & Zone 4 Magazine**



f) Annual brochures. 35,000 printed in 2013 and 2014 and distributed at trade shows, conferences, workshops, farmers' markets, Denver Botanic Gardens

2013 annual brochure (Petites copy only)

PLANT SELECT® PETITES

NEW!

The Plant Select® Petites program debuts noteworthy, well-adapted, unusual plants of smaller stature that have not yet been readily available or known to gardeners. The program also promotes innovative ways to plant and enjoy these treasures in garden situations where small gem-like, but tough plants are best suited: troughs, permanent containers, rock gardens, hillsides, patio gardens, hellstrips, fairy gardens, green roofs and smaller gardens. For more information, visit www.plantselectpetites.org

OXSLIP PRIMROSE
Primula elatior

This charming but tough primrose is more persistent and tolerates more heat and drought than most of its kin. Clusters of soft yellow flowers, often fragrant, rise above pale green rosettes of foliage in spring, attracting bees. This is the true wild form rarely found in the trade.

Recommendation: Perennial
Height: 10-15"
Width: 12-15"
Blooms: April-May
Sun: Partial shade
Water: Moderate to dry
Hardiness: USDA zones 4-8
Culture: Any soil, clay-tolerant
Native to: Eurasia
Attracts: Bees

SANDIA CORALBELLS
Heuchera pulchella

This miniature, extra cute version of the well-known coralbells makes a tidy evergreen tussock of ruffled fresh green leaves. Spikes of petite rose-pink bells emerge in late spring, attracting hummingbirds and bees.

Recommendation: Perennial
Height: 3-8"
Width: 6-10"
Blooms: May-June
Sun: Full sun to partial shade
Water: Moderate, tolerates dry shade
Hardiness: USDA zones 4-7, zone 8 cool-temperate
Culture: Loamy or sandy soils
Native to: High elevation New Mexico
Attracts: Hummingbirds and bees

SCOTT'S SUGARBOWLS, SCOTT'S CLEMATIS
Clematis scottii

Long-blooming Scott's sugarbowls make a mound of blue-green, lacy foliage topped in late spring and early summer by large, nodding blue flowers. Bees and bumblebees frequent the bell-shaped blossoms. Shimmering golden seed heads follow suit.

Recommendation: Perennial
Height: 8-15"
Width: 12-18"
Blooms: May-July
Sun: Full sun
Water: Moderate to dry
Hardiness: USDA zones 4-7, zone 8 cool-temperate
Culture: Any soil, clay tolerant
Native to: Southern Rockies
Attracts: Bees, bumblebees, sometimes hummingbirds

2014 annual brochure copy (Petites only)

DALMATIAN PINK CRANESBILL
Geranium dalmaticum

CONTAINERS ☑
ROCK GARDENS ☑
FRAGRANT ☑

Low-growing diminutive perennial geranium with clear pink flowers in late spring to early summer. Daintily cleft, aromatic leaves are glossy green all season long turning red in fall and on into early winter before drying and dropping. Excellent choice for small spaces, rock gardens and permanent containers.

HEIGHT: 6-18"
WIDTH: 6-8'
BLOOMS: Pink; late spring to early summer
SUN: Full sun to part shade
WATER: Moderate to dry
HARDINESS: USDA zones 5-7
CULTURE: Loam or sandy soils

DWARF BEACH-HEAD IRIS
Iris hookeri, I. setosa ssp. canadensis

CONTAINERS ☑
ROCK GARDENS ☑
FRAGRANT ☑

Compact, tidy iris with attractive green foliage framing large, porcelain-blue flowers in late spring and early summer. One of North America's most beautiful native irises. Excellent foliage and textural accent for rock gardens and permanent containers. Provide supplemental water prior to, and during flowering to keep blooms robust.

RECOMMENDATION: Perennial
HEIGHT: 8-12"
WIDTH: 8-12"
BLOOMS: Blue; late spring-early summer
SUN: Full sun to part shade
WATER: Moderate to dry
HARDINESS: USDA zones 3-8
CULTURE: Loam or amended sandy soils

DWARF PIÑON PINE
Pinus edulis selections
(Farmy, Trinidad)

CONTAINERS ☑
ROCK GARDENS ☑
WINTER INTEREST ☑

Dwarf selections of native piñon pine that grow extremely slowly, forming tight mounds over many years. Extremely drought-tolerant dwarf conifer, adapting well to harsh conditions. Excellent evergreen choice for rock gardens and permanent containers. Selected by Jerry Morris, Denver.

HEIGHT: 1-3"/yr (20-30" in 10 yrs)
WIDTH: 1-3"/yr (20-30" in 10 yrs)
SUN: Full sun
WATER: Xeric
HARDINESS: USDA zones 4-7
CULTURE: Loam or sandy soils

g) **Hypertufa troughs for retail displays:** Thirty handmade hypertufa troughs (pots) were purchased from Beyond Bluegrass Landscaping in January, 2014. They were delivered to Laporte Avenue Nursery who then planted and delivered to 12 retail garden centers in the Front Range. These planted troughs were to be used to help promote plant sales.

h) Website creation: Hanna Design created a new, dedicated website. Additional pages on the site include Inspiration, Companion Plants, Patio Gardening, Rock Gardening and Where to Buy. Google analytics reports that from January 1, 2012 – October 9, 2014, 3,486 unique visitors came to the plantselectpetites.org website, viewing a total of 17,306 pages.

i) Outreach: A team of experts, including Panayoti Kelaidis and Mike Kintgen (Denver Botanic Gardens), Lauren Springer Ogden and Pat Hayward conducted presentations, published articles and set up booths at tables at consumer and professional displays. All displays were in conjunction with "regular" Plant Select® promotions. Planted troughs displayed at ProGreen Expo were particularly well received. The public seemed very interested and excited about "cute and hardy" plants for smaller spaces and containers.

In 2013 resources for publishing e-newsletters and social media postings were limited, but in biweekly posts were made in 2014 from March through June and most contained links to the Petites website.

Above: ProGreen Expo, Denver, February, 2013

k) Demonstration Gardens: 56 of our public demonstration garden partners attended the annual meeting on June 13, 2013 at Denver Botanic Gardens. Attendees were introduced to rock gardening concepts by Mike Kintgen, DBG Rock Alpine Garden curator, and were given sets of both years' (2013 & 2014) plants to be used for public displays. 43 demonstration gardens were represented at the annual meeting held on October 8, 2014. Kenton Seth presented a program on crevice gardening, offering new ways to utilize plants in the Plant Select® Petites program. These demonstration gardens are required to submit annual performance surveys – results listed here.

2013 annual performance survey of Demonstration Gardens (based on a 1-9 scale)

Plant Select® Petites Rating Averages

SCIENTIFIC NAME	TRADE OR COMMON NAME	AVERAGE	NUMBER OF RESPONSES
Androsace sarmentosa 'Chumbyi'	Chumbyi rock jasmine	7.33	3
Clematis scottii	Scott's sugarbowls	6.25	4
Geranium dalmaticum	Dalmatian pink cranesbill	7.25	4
Heuchera pulchella	Sandia coralbells	7.50	6
Primula elatior	Oxlip primrose	5.20	5

2014 annual performance survey of Demonstration Gardens (based on a 1-9 scale). More than twice as many gardens reported performance than in 2013.

Plant Select® Petites Rating Averages

SCIENTIFIC NAME	TRADE OR COMMON NAME	AVERAGE	NUMBER OF
Androsace sarmentosa 'Chumbyi'	Chumbyi rock jasmine	7.67	6
Clematis scottii	Scott's sugarbowls	5.33	9
Geranium dalmaticum	Dalmatian pink cranesbill	6.60	15
Heuchera pulchella	Sandia coralbells	6.36	14
Iris hookeri, I. setosa ssp. canadensis	Dwarf beach-head iris	6.29	14
Pinus edulis	Dwarf piñon pine	7.67	3
Primula elatior	Oxlip primrose	6.13	8

Goals & Outcomes Achieved

Desired Outcome	Performance Measure	Baseline	Goal for Year 3 - 2014	Actual totals 2012-2014
To increase garden center participation	Track annual retail sellers	NA	40	17 retailers; 15 listed on website http://www.plantselectpetites.org/where-to-buy/ plus two mail-order sources
To increase consumer brand awareness	Track annual website hits	NA	20,000 web visits	17,306 page views
To increase consumer demand	Track annual unit sales	NA	10 growers, 30,000 plants sold	6 growers, 23,100 plants sold

Beneficiaries

Beneficiaries include the six growers, 15 retailers and two mail-order retailers who chose to participate in the program. There may have been additional retailers but they did not notify us nor request to be listed as a retail source on our website.

Lessons learned

In 2013, the overall challenges were launching with just three plants and not having enough time and resources to keep posting news and updates throughout spring. We also found that retailers were NOT interested in dedicated displays, planted troughs and banners at this point. Three more plants were promoted in 2014, but that still didn't seem enough of a "program" for the retailers. The number of plants promoted within the program will increase with each year so we see

awareness, interest and sales increasing with time. We had better social and promotional outreach in 2014.

There were some production challenges (longer than anticipated production time) with three of the plants, and those showed the lowest sales. We also found that the specialized growers carried a full range of the plants, but other growers who participated grew a very limited selection, proving these are indeed specialized plants that are not easily incorporated into standard growing practices.

Our trough promotion in the spring of 2014 was challenging. Although we sent out four mailings to 45 garden centers, response was extremely disappointing. Those retailers that did not want troughs stated lack of room for the main reason. Once the season had gotten into full swing they no longer felt it worthwhile to dedicate space for display-only.

The new website is relatively static so there's not a lot of reason for people to return to the site, though we do try to update the photo gallery periodically. Much of the same information is also on our main site, Plantselect.org, so viewers many may be landing on that site instead. There is a direct link to the Petites site from plantselect.org.

We didn't see the participation on either the grower or retailer side that we'd projected and hope that additional plants and additional public exposure will increase participation. Though the concept is embraced by both growers and retailers, it seems that launching a new program of small plants with just three each year does not make a feasible project.

Contact Person

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director@plantselect.org
970-481-3429

Additional Information

$8,173.10 of the grant funding of $15,000 was spent (54 percent). As expected, many of the marketing expenses were indeed up-front costs. We chose not to spend the entire funding amount as participation was lower than anticipated and additional expenditures couldn't be justified. Basically, we felt that putting more money into the project was not going to increase sales in the time period allotted.

SPECIALTY CROP TEST PLOTS PRODUCTION AND MARKETING
FINAL REPORT

PROJECT SUMMARY

Crop diversity is essential to the future of the Republican River Basin. The economy of this region is dependent on irrigated agriculture as the primary source of income, employment and regional wealth. The availability of the Ogallala Aquifer water is what allows generations to reside in this area. The continuous demand on the Ogallala Aquifer to supply water for all of the residents' needs has come at a price. The outlying edge of the aquifer has gone dry. This is a trend that northeastern Colorado cannot afford. Area producers and water users need to be proactive by wisely using the remaining water resources and making plans to reduce consumptive use by planting higher value crops or low water low water use crops that can be processed into value added products to improve the rural economy while conserving the Ogallala Aquifer. Identification of potential high value, low water-use, specialty crops is critical to the continuation of the Republican River Basin community. Through the District's research in identifying viable regional crops at the test plots, producers are able to gain confidence in the specialty crop production and evaluate potential crops for their operations. An essential component to making specialty crops of the region a realistic option for producers is developing a strategic plan to access the marketplace; in the coming year the District will concurrently develop a strategy to assist local producers with entry to the marketplace through a variety of means including but not limited to: direct sales, Community Supported Agriculture (CSA), wholesale and cooperative sales approaches.

This was the fourth year of research on specialty crops for the area. The research on most of the specialty crops tested indicates that the majority of crops are suitable for the area and with proper marketing strategies in place the crops can be a true alternative to reduce water and energy consumption as well as provide alternative business opportunities for our region.

PROJECT APPROACH

Crops were researched, selected, planted, cared for, harvested and records were kept. On the marketing track research was done by speaking with area producers and marketing outlets as well as additional information gathered on the internet and that lead to conversations with other groups that have been working on similar issues in other areas. Relevant information was compiled into three documents: the 2012 Specialty Crop Test Plot Book, Northeastern Colorado Direct Marketing Options and Community Supported Agriculture (CSA) handouts. The Center for Systems Integration (now Spark Policy) did the majority of the work on the marketing track.

GOALS AND OUTCOMES ACHIEVED

Five producers grew specialty crops as identified as a goal for 2012. Crop varieties were selected, planted, and relevant growing data was collected and all crop results were accumulated and put into the Specialty Crop Test Plot Book. A general overview of results is below.

Basil- Genovese & Italian Large Leaf varieties were planted an average of 44 plants per 75 foot

row, total applied irrigation 9.772 inches. Harvest was taken weekly an average of 2.2 oz per plant from 7/7/12 through frost.
Fennel-Zefa Fino planted one 25' row with 3' spacing, 8 seeds per inch were planted. A total of 5 plants emerged.
Peppers-Chili-O: 10, Islander: 8, Alma Paprika: 12, Odessa Market: 17, Esperada: 10, Chocolate: 4 and Aci Sivri: 39 plants made it to production. Total poundage average extrapolated pre acre is 39,623.
Canna- Planted 77 rhizomes in 4 twenty five foot rows with 3' row spacing. Total applied irrigation 3.141 inches. Harvested 338 rhizomes after first frost (56,337 rhizomes per acre).
Asparagus-Two 90 sq. ft. sections were planted in 2012 harvest will begin in 2013.
Sesame-White variety did not germinate; Black variety did on irrigated and non irrigated. Crops developed seed pods but they did not mature prior to frost.
Shallots-35 pounds were planted, plot had water delivery and weed issues. 3.965 inches were applied and 391 pounds were actually harvested (3,398 lbs per acre).
Garlic-Siberian, Lokalen and Purple Glazer were planted. Water delivery issues and weeds caused problems with the plots (1,712 pounds on average per acre).
Dill-14 plants per 75 square foot were planted. Harvest was approximately nine pounds.
Carrots-Variety packet of heirloom carrots were planted in a 25' row five seeds per row. 26 carrots emerged, or (15,101 per acre).
Epazote & Parsley-Total crop failure.
Grass Pea-Total crop failure.
White Sage-Seedlings were transplanted June first. Fourteen plants with an average height of 13 inches and 8 shoots per plant. Total dry weight of 10.5 oz was harvested.
Nopal Cactus-Opuntia Humifusa & Macrorhiza were planted. All plants survived for a total of 40. Well developed pads from previous year's growth were transplanted. Harvest will occur in 2013.
Kabocha-Sunshine and Confection varieties were planted a total of 37 plants. Total fruits were 79, (83,424 per acre).
Nematicidal Marigold-Four seeds were planted per inch, crop did not bloom until a few days before frost so no harvest is recorded.
Hops- Sterling, Magnum, Fuggle 1, Newport, Ringwood, Centennial, Perle, Zeus and Cascade were planted. The mature plants were harvested for the rhizomes. An average of eleven rhizomes per plant were harvested.

The Yuma Conservation District's (YCD) work in testing low water specialty crops found a variety of new crops that grow well in the dry conditions of Northeastern Colorado. The first step was to determine which crops could be grown successfully, but for producers to switch to these new low water crops, they must be assured of buyers. YCD contracted with Spark Policy Institute to explore direct marketing options. Based on the initial overview of all direct market options, YCD determined that local producers were most interested in starting Community Supported Agriculture (CSAs) programs. Two guidance documents have been developed to support small specialty crop producers on the Northeastern plains of Colorado. These are:

1. *Northeastern Colorado Direct Marketing Option*s: This guide provides an overview of many direct marketing options along with hyperlinks to key resources.

2. *Northeastern Colorado Agricultural Strategy – Community Supported Agriculture*: This report provides step-by-step guidance on how to start up and maintain a successful Community Supported Agriculture (CSA) program along with links to tools and resources.

The supporting publications are online at http://www.yumaconservation.org/Enter%20Yuma%20Conservation%20District/Test_Plots.htm and greater details can be found within them.

The Field Day was attended by sixteen interested producers. Field Day was held on September 12th to share information with the public. Additional outreach occurred through presentations at several meetings, workshops and the Irrigation Research Farm Show.

Desired Outcome	Performance Measure	Baseline (based on 2010 growing season)	2012	
			Goal	Actual
To identify specialty crops suited for adoption in Northeastern Colorado with potential for production in eastern Colorado production systems	Number of specialty crops determined to have potential for production and marketing	Four crops have shown potential	Refined based on 2011 growing season	Hops (for rhizomes), Kobocha Squash, Peppers (hot and sweet) have shown over the years that they should be good area crops. Others with highest potential that need more research include garlic, cannas, nopal cactus, basil, hops (for beer production) and nematicidal marigolds.
To increase grower awareness to the economic potential for incorporating vegetable, floral and nursery crops into their operation and marketing methods	Number of producers that log into access yield data on REACH Hub online database	Based on data evaluated at the end of CY11	Estimated 5% increase	REACH* data was unavailable; however we gave presentations at several meetings, workshops, the Irrigation Research Farm Show and the Specialty Crop Test Plot Field Day. The documented outreach at these events is 213 contacts with producers. 181 contacts were made in the previous year so this goal was attained with a 17.6% increase.
To develop a strategy to assist local producers with entry to into the marketplace of the specialty crops	Evaluate direct sales, CSA, wholesale and cooperative sales approaches with producers and consultant	N/A	Best approach for marketing crops	The strategy developed is outlined in the two workbooks Northeast Colorado Community Supported Agriculture and Northeast Colorado Direct Marketing. These books have identified ways to determine is the best route for marketing based on individual producers operations and needs. (Publications will be on the website.)

*Increase in awareness was tracked by one on one conversations with producers about specialty crop potential as well as presentations in meetings and at events. It was quantified by sign in sheets and notes taken by staff. We don't have access to the previous data for REACH as the account with the host was deleted when problems arose with it and the subscription was not renewed.

BENEFICIARIES

Producers that grow or are looking into growing specialty crops in Northeast Colorado have benefitted by this year's grant funds. Increased knowledge of cropping requirements as well as the research that has been done on the marketing alternatives will all be made available on the District's website www.yumaconservation.org and district staff will be available to assist these producers in the future to share what we have learned from this valuable project. There is a group of area producers that are seriously considering forming a cooperative CSA to expand their business and better serve the residents of Northeast Colorado by offering fresh, naturally grown produce to this food desert stricken area. In the District's long range plan we have selected the goal of assisting these producers by helping them to identify appropriate equipment to grow this industry as well as obtain funding to do so.

LESSONS LEARNED

All goals identified in the original application were achieved. A complete accounting of the 2012 Specialty Crop Test Plots results can be found in the 2012 Specialty Crop Test Plot results book. While it is difficult to make recommendations from three years of cropping data the indications thus far show shallots, garlic, hops rhizomes, nopal cactus and truck vegetables as a good fit for the area's growing conditions. A few years of additional research will glean a more definitive answer. With proper marketing strategies in place the crops can be a true alternative to reduce water and energy consumption as well as provide alternative business opportunities for our region.

CONTACT PERSON

Bethleen McCall, District Manager, Yuma Conservation District
Phone: (970) 848-5605
Email: ycd@yumaconservation.org

ADDITIONAL INFORMATION

There is additional information including many photos on the Yuma Conservation District's Facebook page and website, www.yumaconservation.org.

Final Report: Developing a Produce Growers Organization in Colorado
Partner Organization: Colorado State University

Project Summary:

Specialty crop producers in Colorado face many common challenges. Population growth is altering markets and increasing pressure on land and water resources. Skyrocketing production costs and additional regulations governing labor, food safety, and marketing create numerous hurdles for farmers to manage. Lawmakers unfamiliar with Colorado agriculture are developing policies and regulations with potential adverse effects. This project was initiated to form a state-wide organization that would help growers pool their resources, improve grower-to-grower networking, and collectively address the aforementioned issues.

Accordingly, the Colorado Fruit and Vegetable Growers Association (CFVGA) was developed as a 501(c)(6) nonprofit organization directed at improving the business sustainability and profitability of commercial fruit and vegetable growers of all sizes, organic and conventional, and direct and wholesale marketers.

As part of its structure, the CFVGA has seated a board of directors representing the different production areas of the state, created by-laws, and defined a mission. In addition, a highly interactive web site (www.coloradoproduce.org) and social media site (www.facebook.com/CFVGA) were developed that link growers to pertinent information and act as portals for improved communication and networking. The organization continues to accumulate members and will host its first annual conference in February 2015.

Project Purpose:

The overall purpose of the project was to create an organization and supporting infrastructure to help specialty crop growers in Colorado address existing and developing issues. Historically, Colorado has had challenges in organizing its specialty crop industry due to the diversity of the crops grown, variations in climate, and wide geographical distances between production areas. This project was designed to facilitate the development of a state-wide grower's organization with the assistance of web-based and other related technologies. Another critical step in the project was the formation of an organizational board and guiding by-laws.

The timing of this project is especially critical as growers in the state face numerous regulatory challenges pertaining to food safety, labor, and water. Commodity groups focused on a single crop have had some success in addressing issues that face their industries. However, to date, many Colorado growers do not have an adequate voice and resources to address the wide of array of issues facing them.

Project Activities:

1. **Formed a Board of Directors and Elected Officers** - The Board is composed of conventional and organic fruit and vegetable growers of various scales and marketing channels from four key produce growing regions of Colorado and industry representatives.

    - Arkansas Valley - Shane Milberger and Paul Casper (Treasurer)
    - Northern Colorado - Robert Sakata (President) and Jason Condon
    - San Luis Valley - Amy Kunugi (Vice President)
    - Tri-River Area & Western Colorado - Kerry Mattics and Bruce Talbott (Secretary)
    - Industry - Aaron Perry and Elizabeth Parker
    - CSU Extension Support - Mike Bartolo, Adrian Card, Bob Hammon and Martha Sullins

The CFVGA Board at the organizational "launch" in February 2014 held in conjunction with the Governor's Forum on Colorado Agriculture

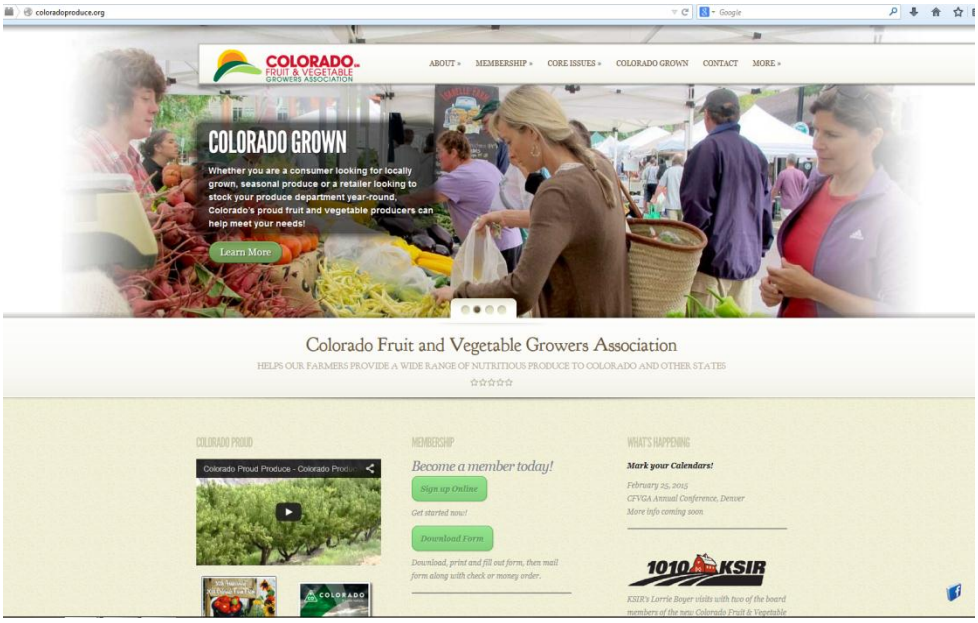
2. **Developed By-Laws and Mission –** a set of by-laws was constructed and approved by the newly formed Board of Directors with professional legal guidance. As part of those by-laws, a mission and purpose statement was developed and reads as follows:

    The mission of CFVGA is to promote the general and common interests of its members. The purposes within this mission shall include:

    a. Network and provide a voice for its members
    b. Improve business sustainability and profitability of members
    c. Foster research for the benefit of its members
    d. Disseminate research, news, and best management practices to its members
    e. Enhance collaborative relationships with Colorado State University, other universities and research Institutions, Colorado Department of Agriculture, local, state, federal governments, policy makers, suppliers, distributors, other affiliate growers associations and other partners in the business success of its members.

3. **Created Legal Status -** The Colorado Fruit and Vegetable Growers Association (CFVGA) was developed as a 501(c)(6) and officially registered with the Secretary of State in Colorado.

4. **Developed Web Site and Social Media Site –** A highly interactive web site (www.coloradoproduce.org) and social media site (www.facebook.com/CFVGA) were developed that link growers to pertinent information and act as a portal for improved communication and networking.



Website and Facebook page for CFVGA.

5. **Hired an Administrator –** An Administrator was hired by the organization to facilitate recruitment and membership activities, manage accounts, and carryout other general duties for the organization.

6. **Launched Organization and Membership Drive –** The organization was officially launched in February 2014 at the Governor's Forum on Colorado Agriculture. The CFVGA concurrently initiated a membership drive via the web site and printed materials and began collecting membership dues on its way to becoming a self-sustaining entity.

7. **Developed Branding and Marketing Materials-** The CFVGA employed brand and marketing professionals to develop an easily identifiable logo, trade show/meeting banner, brochures, and related promotion materials to encourage grower participation.

Logo (top) and three-panel promotional banner (bottom) for the CFVGA

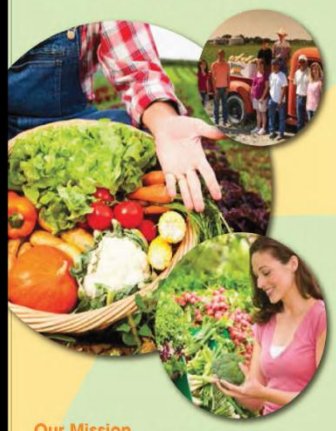
CFVGA SM
Colorado Fruit & Vegetable Growers Association

Membership and informational brochure for the CFVGA

Our Fields and Orchards are Tops in the Nation

Colorado produces a wide variety of fruits and vegetables under some of the best climatic conditions in the country. Warm days, cool nights, and plentiful high-altitude sunshine give rise to flavor and nutritional quality that is unparalleled.

Fruit and vegetable production is almost a **300 million dollar industry** at the farm gate in Colorado with over **60,000 acres** in production. Besides nutritious and flavorful products, the industry supplies the citizens of Colorado with many other attributes (agritourism, open spaces, etc.) that truly elevate the quality of life in the state.



Our Mission

Our mission is to help improve the business sustainability and profitability of commercial fruit and vegetable growers in Colorado of all sizes, organic and conventional, direct marketing (farmers market, CSA, produce stand, etc.) and wholesale marketing.

Membership Benefits

We Represent You

CFVGA is the only organization that represents all produce growers around the state. We advocate on your behalf, addressing many important issues:

- Labor recruitment, retention and labor-associated regulations
- Water use and rights
- Food safety training, auditing, and compliance
- Pesticide use, registration, and compliance
- Support for organic growers
- Promotion and agriculture education
- Feedback to agricultural professionals and politicians on produce growers' needs
- Research specific to Colorado
- Technology to improve grower networking throughout the state
- Development of beginning farmers

Industry Resources and Support

With numerous educational and networking opportunities, CFVGA offers unique membership benefits. CFVGA is your primary resource for working with Colorado State University, Colorado Department of Agriculture and other state and federal organizations. In addition, CFVGA has established several alliances that will benefit you in areas critical to your business:

Food Safety
We can help you with tips to begin your food safety program, find resources to enhance your farm or packing facility, find continuing education for the latest food safety developments, and connect you to other growers with similar needs. We are affiliated with leaders in produce safety including Center for Produce Safety (CA) and Produce Safety Alliance (NY).

Labor
We are partnering with Colorado State University exploring labor conditions in Colorado and promoting best practices for recruiting and retention to growers.

Water
CFVGA board members are leaders in Colorado water policy and engagement including Board membership with the Colorado Ag Water Alliance.

Experienced Leaders

Our **board members** are growers and industry leaders that understand your needs. Your voice will be heard when it comes to critical issues facing our industry. That's because CFVGA represents conventional and organic fruit and vegetable growers of various scales, and marketing channels from four produce growing regions of Colorado:

1. Arkansas Valley (Shane Milberger and Paul Casper)
2. Northern Colorado (Robert Sakata and Jason Condon)
3. San Luis Valley (Amy Kunugi)
4. Tri-River Area, Western Colorado (Kerry Mattics and Bruce Talbott)

Industry Members:
Aaron Perry (SOURCE Local) and Elizabeth Parker (DuPont)

Partner Board Members:
Adrian Card, Mike Bartolo

Join Us at Our Annual Conference!

February 25, 2015 at the Renaissance Hotel in Denver. Highlights:

- Importance of Colorado produce
- Exhibitors/trade show
- How to comply with the Worker Protection Standard
- Exploration of CFVGA strategic plan
- Networking with other growers
- Engagement with produce buyers
- Focus groups on direct market and organic topics
- Refining your eMarketing
- CFVGA annual meeting

Join Today!

2014-2015 Membership Application
Dues received Oct 1-Dec 31, 2014 will expire December 31, 2015
Please mail this cut-off portion to:
CFVGA, P.O. Box 2255, Loveland, CO 80539
Or apply and pay dues online at:
www.coloradoproduce.org

Date: _____ Tel: _____
Company: _____
Contact: _____
Email: _____

Please indicate membership type (select one):

Grower Member – (please check the level of annual gross sales below)
Any person, partnership, corporation or other entity with office or facilities located within the state of Colorado engaged in growing vegetables and fruits for commercial purposes. Annual Gross Sales Determines Annual Dues Owed (each Grower Member has one vote)

- ☐ $300 - Annual gross sales over $500k
- ☐ $200 - Annual gross sales $100k-$499k
- ☐ $100 - Annual gross sales under $100k

Industry Member
Any person, partnership, corporation, or other entity with a financial interest in the commercial vegetable and fruit industry in Colorado.
☐ $300

Partner Member
Any person, partnership, corporation, or other entity with a collaborative interest in CFVGA including but not limited to Extension, research, teaching and/or other exemplary contribution to the commercial vegetable and fruit industry in Colorado

☐ $25 (Partner members do not have voting privileges)

Total due: $_____

Payments to Colorado Fruit and Vegetable Growers Association are not deductible as charitable contributions for federal income tax purposes. However, they may be deductible under other provisions of the Internal Revenue Code.

"Our niche is providing one voice for all produce growers in Colorado."
– Adrian Card, Board Member Partner

COLORADO
FRUIT & VEGETABLE
GROWERS ASSOCIATION

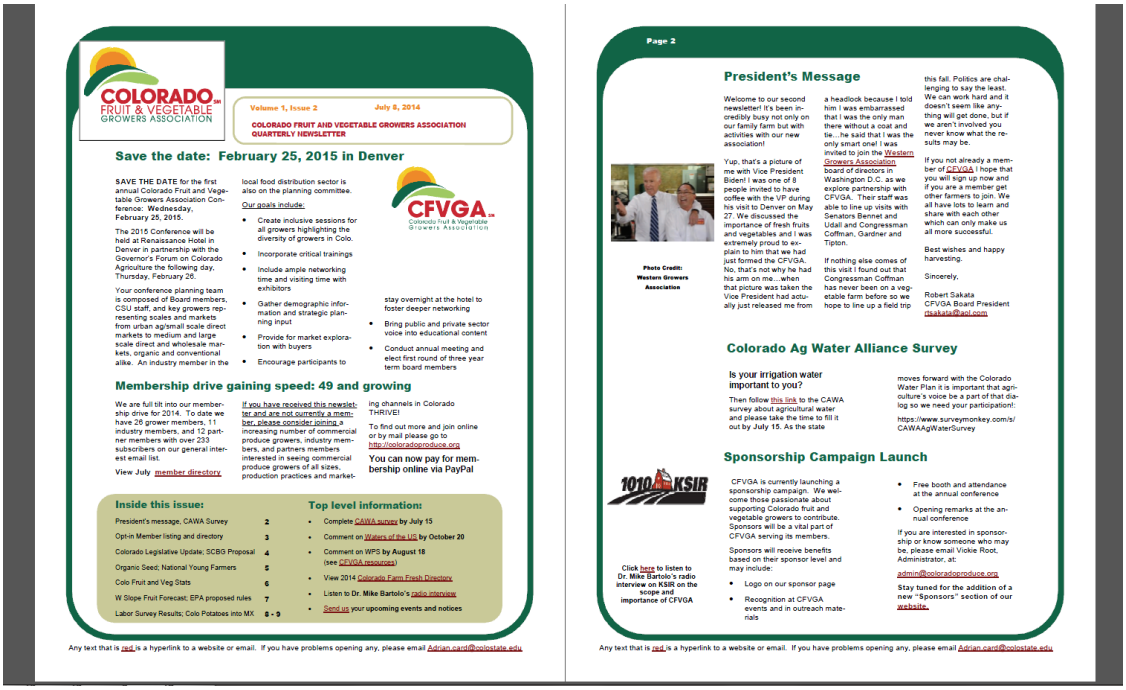
Growing Resources
Cultivating Success

COLORADO
FRUIT & VEGETABLE
GROWERS ASSOCIATION
PO. O. Box 2255
Loveland, CO 80539
970-667-4949
facebook.com/CFVGA
coloradoproduce.org

The Colorado Fruit and Vegetable Growers Association (CFVGA) is a 501(c)(6) nonprofit organization.

8. **Developed Outreach and Networking System -** Developed and utilized *Constant Contact* e-mail list to communicate with general interest and member subscribers. In addition, quarterly newsletters were written and delivered to subscribers.

Sample of newsletter delivered to CFVGA members and general subscribers



COLORADO FRUIT & VEGETABLE GROWERS ASSOCIATION

Volume 1, Issue 2 July 8, 2014

COLORADO FRUIT AND VEGETABLE GROWERS ASSOCIATION QUARTERLY NEWSLETTER

Save the date: February 25, 2015 in Denver

SAVE THE DATE for the first annual Colorado Fruit and Vegetable Growers Association Conference: Wednesday, February 25, 2015.

The 2015 Conference will be held at Renaissance Hotel in Denver in partnership with the Governor's Forum on Colorado Agriculture the following day, Thursday, February 26.

Your conference planning team is composed of Board members, CSU staff, and key growers representing scales and markets from urban ag/small scale direct markets to medium and large scale direct and wholesale markets, organic and conventional alike. An industry member in the local food distribution sector is also on the planning committee.

Our goals include:

- Create inclusive sessions for all growers highlighting the diversity of growers in Colo.
- Incorporate critical trainings
- Include ample networking time and visiting time with exhibitors
- Gather demographic information and strategic planning input
- Provide for market exploration with buyers
- Encourage participants to stay overnight at the hotel to foster deeper networking
- Bring public and private sector voice into educational content
- Conduct annual meeting and elect first round of three year term board members

CFVGA Colorado Fruit & Vegetable Growers Association

Membership drive gaining speed: 49 and growing

We are full tilt into our membership drive for 2014. To date we have 26 grower members, 11 industry members, and 12 partner members with over 233 subscribers on our general interest email list.

View July member directory

If you have received this newsletter and are not currently a member, please consider joining a increasing number of commercial produce growers, industry members, and partners members interested in seeing commercial produce growers of all sizes, production practices and marketing channels in Colorado THRIVE!

To find out more and join online or by mail please go to http://coloradoproduce.org

You can now pay for membership online via PayPal

Inside this issue:

Top level information:

- Complete CAWA survey by July 15
- Comment on Waters of the US by October 20
- Comment on WPS by August 18 (see CFVGA resources)
- View 2014 Colorado Farm Fresh Directory
- Listen to Dr. Mike Bartolo's radio interview
- Send us your upcoming events and notices

Any text that is red is a hyperlink to a website or email. If you have problems opening any, please email Adrian.card@colostate.edu

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President's Message

Welcome to our second newsletter! It's been incredibly busy not only on our family farm but with activities with our new association!

Yup, that's a picture of me with Vice President Biden! I was one of 8 people invited to have coffee with the VP during his visit to Denver on May 27. We discussed the importance of fresh fruits and vegetables and I was extremely proud to explain to him that we had just formed the CFVGA. No, that's not why he had his arm on me…when that picture was taken the Vice President had actually just released me from a headlock because I told him I was embarrassed that I was the only man there without a coat and tie…he said that I was the only smart one! I was invited to join the Western Growers Association board of directors in Washington D.C. as we explore partnership with CFVGA. Their staff was able to line up visits with Senators Bennet and Udall and Congressman Coffman, Gardner and Tipton.

If nothing else comes of this visit I found out that Congressman Coffman has never been on a vegetable farm before so we hope to line up a field trip this fall. Politics are challenging to say the least. We can work hard and it doesn't seem like anything will get done, but if we aren't involved you never know what the results may be.

If you not already a member of CFVGA I hope that you will sign up now and if you are a member get other farmers to join. We all have lots to learn and share with each other which can only make us all more successful.

Best wishes and happy harvesting.

Sincerely,

Robert Sakata
CFVGA Board President
rksakata@aol.com

Photo Credit: Western Growers Association

Colorado Ag Water Alliance Survey

Is your irrigation water important to you?

Then follow this link to the CAWA survey about agricultural water and please take the time to fill it out by July 15. As the state moves forward with the Colorado Water Plan it is important that agriculture's voice be a part of that dialog so we need your participation!:

https://www.surveymonkey.com/s/CAWAAgWaterSurvey

Sponsorship Campaign Launch

1010 KSIR

CFVGA is currently launching a sponsorship campaign. We welcome those passionate about supporting Colorado fruit and vegetable growers to contribute. Sponsors will be a vital part of CFVGA serving its members.

Sponsors will receive benefits based on their sponsor level and may include:

- Logo on our sponsor page
- Recognition at CFVGA events and in outreach materials
- Free booth and attendance at the annual conference
- Opening remarks at the annual conference

If you are interested in sponsorship or know someone who may be, please email Vickie Root, Administrator, at:

admin@coloradoproduce.org

Stay tuned for the addition of a new "Sponsors" section of our website.

Click here to listen to Dr. Mike Bartolo's radio interview on KSIR on the scope and importance of CFVGA

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Goals and Outcomes Achieved:

Goal 1: Form a Board of Directors

Proposed Target- At least two growers from each growing region of the state were to populate the board.

Actual Accomplishments and Outcome – The initial board was able to seat only one grower from the San Luis Valley and none from SW Colorado. As a result, two additional board members were solicited from industry partners and two other affiliate (non-voting) members from Colorado State University Research and Extension personnel.

Recommendations - Additional growers should be sought from under represented parts of the state. Industry partners should also be represented on the Board.

Goal 2: Develop By-Laws with Mission Definition

Proposed Target- A structured and legally binding set of by-laws would be developed to guide the organization.

Actual Accomplishments and Outcome – A complete set of by-laws (available upon request) were developed**.** Within the set of by-laws, a written mission is outlined.

Recommendations – None

Goal 3: Create Legal Structure for Organization

Proposed Target- File for 501(c)3 status in the state of Colorado**.**

Actual Accomplishments and Outcome – After consulting professional legal guidance, the Colorado Fruit and Vegetable Growers Association (CFVGA) was developed as a 501(c)(6) and officially registered with the Secretary of State in Colorado.

Recommendations – None

Goal 3: Develop Web Site

Proposed Target- Develop an interactive web site**.**

Actual Accomplishments and Outcome – A highly interactive web site (www.coloradoproduce.org) and social media site (www.facebook.com/CFVGA) were developed that link growers to pertinent information and acts a portal for improved communication and networking. The website was getting nearly 500 visits per month from approximately 250 different users over the first nine months of 2014. To date, the Facebook page has received over 150 "Likes" from viewers.

Via the web-based portal, a Constant Contact e-mail list was developed to communicate with general interest and member subscribers. In addition, quarterly newsletters were written and delivered to subscribers.

Recommendations – Continue to maintain and upgrade web site content. Adopt new web-based technologies as they become available and use the web site for handling registrations for meeting and other events.

Goal 4: Launched Organization and Membership Drive

Proposed Target- Grow membership in the organization to a critical mass of at least 40 individuals at the conclusion of the project.

Actual Accomplishments and Outcome - The organization was officially launched in February 2014 at the Governor's Forum on Colorado Agriculture. The CFVGA concurrently initiated a membership drive via the web site and other printed materials and began collecting membership dues on its goal to becoming a self-sustaining entity. At the conclusion of the project, over 60 members were enrolled. Membership enrollment had been steadily increasing with major recruitment efforts scheduled for the end of 2014 and early 2015. Brochures and other promotional materials were developed to facilitate membership recruitment.

Recommendations – Continue to solicit membership via web-based technologies and media outlets. Recruitment efforts should be coordinated with the annual conference.

Beneficiaries:

The primary beneficiaries of this project are the over 1,500 Colorado growers of fruit and vegetables who are now served by an effective professional association of peers. Besides impacting the specialty crop growers in the state, this project has importance to industry affiliates. Furthermore, as Colorado consumers become more cognizant of local food production and its economic and nutritional importance, they now have a have more recognizable entity to refer to and identify with.

Lessons Learned:

Use technologies as best you can to bring people together. We were able to overcome some of the challenges historically faced in Colorado by having meetings via web-based video conferencing, e-mailing, and other related technologies. Those technologies significantly reduced travel expenses and the time commitment needed for participants. In addition, the webs site acted as a clearinghouse for information and a means to disseminate materials to prospective and existing members.

Also, it was learned that professional assistance should be employed whenever possible. In the initial proposal, it was thought that some of the web development could be accomplished by student hourly workers. A professional web site developer proved to be most the cost-effective and productive means of achieving that goal. Additionally, professional advice was also critical when it came to legal assistance and developing a strategy for branding and promotion.

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Final Report: Marketing, Research and Technical Support for Colorado's Small Acreage, Socially Disadvantaged and Beginning Specialty Crop Producers – FFY 2011
Partner Organization: Colorado State University

Project Summary

2012 High Tunnel Field Day at CSU Horticulture Field Research Center.

Colorado State University (CSU) provided marketing, research and technical support to Colorado's small acreage, socially disadvantaged and beginning specialty crop producers. Through the Specialty Crops Coordinator, part of CSU's broader Specialty Crops Program, producers benefited from continued research conducted by CSU addressing needs of specialty and small farm producers, including cultivar and season extension, as well as having access to technical support and grant funds for on-farm research and demonstration marketing projects. Research at the CSU Horticulture Field Research Center (HFRC) under the guidance of the Specialty Crops Coordinator included a hop variety trial, research on irrigation strategies for hop growers, high tunnel production of vegetable crops (for the purpose of season extension), production and use of cyanobacteria in crop fertilization, organic vegetable seed production research, research and demonstration on the use of alfalfa and various cover crops as an organic approach to insect pest management and evaluation of plastic mulches for weed control. Part of the grant funds were used for a research and marketing grants program targeted to small acreage, socially disadvantaged and beginning specialty crop producers – Grower Research and Education Grants (GREG).

Project Purpose

The overall purpose of the project was to effectively develop local food systems by supporting producers with on-farm research, allowing them to supplement and/or build on research conducted by CSU, and providing producers with access to technical support and other resources available across CSU's state-wide academic, research and extension networks.

This project was timely and important because developing local food systems has become increasingly prevalent across the United States, and particularly so in Colorado.

One of the major goals of the project was to continue to drive innovation among Colorado's specialty crop producers with ongoing partial SCBGP funding of the Specialty Crops Coordinator position within CSU's Specialty Crops Program. This full-time faculty position was established under the FY09 SCBGP and is also partially funded by CSU. The Coordinator is central to addressing the needs of Colorado's specialty crop producers and creating synergies within CSU to help realize the substantial potential for specialty crops across Colorado. The Specialty Crops Coordinator conducts and facilitates research in specialty crop production and

utilization, including the application of organic methods, especially for organic and small farm producers.

The focus is on solving problems with current crops and on the identification and development of new specialty crop opportunities. The operating costs for cultivar and variety trials research conducted by the Coordinator are funded by CSU.

This project also was timely and important because it provided underserved producers with access to research programs that focused on vegetable and small fruit crops. Another major goal of the project was to deliver research results to producers through demonstrations, field days, workshops, written and electronic communications and farm visits.

SCBGP funds from this grant continued to be used to implement a research and marketing grants program targeted to small acreage, socially disadvantaged and beginning specialty crop producers. Grants were awarded on a competitive basis for purposes of conducting on-farm production and enterprise feasibility studies, and research to complement prior and ongoing research conducted by CSU. Grants could also be awarded for the development and implementation of direct marketing and farm-to-market demonstration projects. It was expected that producers seeking these grants would work in cooperation with CSU research and extension experts to develop project proposals. Similarly, grant proposals could be developed by CSU research and extension experts to work with targeted producers to advance cultivar and varietal research and/or demonstration marketing projects.

This project built on specialty crop research and grant programs that have been part of prior CDA SCBGP applications. More specifically, specialty crop funds allocated to Colorado in 2001 as part of a supplemental agriculture appropriations bill were targeted to a grower grants program in cooperation with CSU. More recently, though, cultivar trials projects were included in the FY06 and FY07 SCBG and FY08 SCBG-Farm Bill programs (which included a project establishing the Specialty Crops Coordinator). The coordinator position was continued in the FY09, FY10, and FY11. SCBG programs included small acreage, beginning farmer and socially disadvantaged producer grants.

Project Activities

Develop grant program guidelines and application; announce the grant program; finalize results from previous years' research; post research results to website; and initiate planning for research.

Grant program guidelines and application were updated from previous years.

A call for proposals was announced in November 2011 for the Specialty Crops GREG program with a targeted audience of small farmers, beginning farmers, and socially disadvantaged farmers.

The finalized results from 2010 research were posted to the specialty crops website and planning for additional research was initiated.

2011 research results were finalized and posted on the specialty crops website in December 2011.

Results from previous years' GREG grants were posted on the website as they became available - http://hortla.agsci.colostate.edu/research-programs/specialty-crops/greg/.

Planning for future research was initiated.

Review new grant proposals; select projects for grant program; develop agreements for grant projects; present previous years research at the Colorado Big & Small Conference; and finalize research plan.

In January 2012 a panel of CSU faculty reviewers awarded seven GREGs out of a pool of 14 applicants.

The grants awarded are as follows:

(1) Greyrock Commons Home Owners - $4,182.00 - Karen Spencer in Fort Collins, CO for Chicken Moat for Pest Management

(2) SongHaven Farm in Cahone, CO - $7,500 The effectiveness of a frost free soil zone in high tunnel growing in winter - Bottom Heated Greenhouse Versus High-Tunnel Winter Salad and Micro-Green Research.

(3) Buffalo Woman (Robyn Nelson & Cody Lyon) $10,000 and
(4) Jumping Goats (Dawn Jump) $5,000 - Development of a locally grown, sustainable potato market in Colorado utilizing on-site farm education, U-pick programs, farmer's markets, and organic production practices coupled with innovative marketing efforts-$5,000 was awarded to each of the three participating farmers.

(5) Katie Slotka - Risk mitigation and season extension for direct market crops using caterpillar tunnels in northern Colorado-$5,818.

(6) GreenLeaf 2012 consumer education and outreach project-$10,000. Greenleaf engages youth in urban agriculture, farming on available lots in neighborhoods that don't have access to fresh fruits and vegetables. GreenLeaf did not complete any activities and did not bill for any grant funds.

(7) Fort Collins Food Cooperative - $10,000 - Market and marketing

Produce growing in high tunnels at CSU Horticulture Field Research Center.

potential for Northern Colorado specialty crops producers through the Fort Collins Food Cooperative

The CSU Ag Business Center developed agreements for the grantees.

The committee reviews the application question(s) that asks the sub-grantee to describe how the project solely enhances specialty crops. The committee uses an evaluation form approved by the CDA's Specialty Crop Program that asks each committee member to gauge/rank how each project will increase/enhance specialty crops. If the project did not appear to solely enhance specialty crops, it would rank poorly among the committee and ultimately would not be chosen to be funded.

Outreach in 2012 included presentation of research results at the Colorado Big and Small Conference in February, a poster presentation at the CSU Ag Extension/AES Forum, and a field day at the CSU Rocky Mountain Small Organic Farm Project (RMSOFP) in April.

Provide technical and management support for grant program and manage research plan (2nd quarter 2012)

Technical advice and assistance was provided to growers and grant recipients throughout late 2011, 2012 and 2013 by the Specialty Crop Coordinator and interim coordinators. CSU SCP also fields a steady stream of telephone and e-mail requests for specific information about specialty crop production and marketing.

The specialty crops coordinator oversaw research conducted at the CSU HFRC. Included in these efforts were: high tunnel based season extension research; production and use of cyanobacteria in crop fertilization, co-sponsored by NRCS; demonstration of organic hops production for Colorado microbreweries; organic vegetable seed production research, co-sponsored by FedCo (Maine); research and demonstration on the use of alfalfa and various cover crops as an organic approach to insect pest management; and evaluation of plastic mulches for weed control.

Demonstration of winter planted greens and a discussion regarding high tunnel enterprise budgets were presented at a field day in April 2012, attended by 32 Colorado growers.

Provide technical and management support for grant program; conduct field day event; and manage research plan (3rd Quarter of 2012).

The loss of the specialty crops coordinator in 2012 resulted in the formation of a search committee in early 2013. During the last quarter of 2013, two candidates were interviewed. One was selected but wanted her spouse to also secure a faculty position at CSU, which was offered. However, the candidate ultimately declined the position. A second search was conducted and two candidates were interviewed in the second quarter of 2014. However, neither of the candidates was selected. In July 2014, an interim assistant professor of specialty crops was hired: Leila Graves, PhD. – Horticulture.

Although this project was originally intended to complete activities in the fourth quarter of 2012, funds were available for continued monitoring of research projects through January 2014, because salary support originally budgeted for the Specialty Crops Coordinator was used instead for graduate assistants fulfilling the duties of that role.

Ongoing research at the CSU HFRC included:

- Organic winter vegetable production in unheated high tunnels - high tunnel production of vegetable crops (multiple varieties of tomato, cucumber, bean, okra, and pepper). This research continued into 2014 with funding from the 2012 SCGBP.
- Evaluation of plastic mulches for weed control, soil warming, and moisture retention - using different grades of plastic mulch to determine best practices. This research continued into 2014 with funding from the 2012 SCGBP.
- Hop variety trials. The hop variety trials failed due to a virus (see more in "Lessons Learned."

Review final reports for previous year's grant projects; develop evaluation report of grant program; finalize results from research; post research to CSU Specialty Crop Program website.

Final reports from previous year's grants were received and evaluated and posted to the website.

Due to the loss of the Specialty Crops Coordinator in 2012, research on the high tunnels and plastic mulches was not completed until 2014. Analysis and research activity reports that were originally planned for 2012 and 2013 were not completed until 2014, due to the lack of a Specialty Crops Coordinator. Final analysis and research reports are currently being completed by the new CSU Specialty Crop Coordinator, Leila Graves. Results will be available in February 2015.

Goals and Outcomes Achieved

1. **Desired Outcome**: To facilitate specialty crop production innovation as well as direct marketing opportunities among small acreage, socially disadvantaged and beginning specialty crops producers.

   Performance measure: The number of on-farm research, demonstration and marketing project grants awarded to small

GREG Grant: Chicken moat for pest management

acreage, socially disadvantaged and beginning specialty crop producers.

Baseline: In 2010 CSU awarded 6 small acreage, socially disadvantaged and beginning specialty farmers Grower Research and Education grants.

Goal for 2012: Increase number of grants awarded at least 10%.

Outcome: Seven grants were awarded in 2012 on a competitive basis for purposes of conducting on-farm production and enterprise feasibility studies, and research to complement prior and ongoing research conducted by CSU. Six of these grants were extensions of 2011 grants. Supervision and administration of these grants continued into 2013.

Specialty crop projects supported by GREG program grants are monitored through: 1. the involvement of the Technical Advisor, and 2. site visits made by the CSU SCPGP Coordinator. CSU SCPGP Coordinator made site visits in 2011. Because of the loss of the CSU SCPGP Coordinator in 2012, Sara Kammlade, CSU graduate assistant in the Horticulture department, made annual farm visits to SCP GREG recipients in 2012, as well as to GREG recipients from previous years whose grants were continuing.

GREG grant recipient Jumpin' Good Goat Dairy wanted to make use of their ample supply of goat manure. Their project is looking at how successfully they can grow organic potatoes at high altitude using goat manure as a soil amendment.

The site visits are particularly important in assuring that all projects not only are focused on the agreed upon objectives, but also that all USDA program guidelines are followed. For example, certain projects, while clearly designed to enhance specialty crop production in Colorado, may have approaches, titles, etc., that might raise questions in this regard. The site visits help confirm that these and other projects are focused solely on Specialty Crops per se. SCP Coordinator visits to the sites also provide assurance about appropriateness of expenditures and project management that accounting information may not provide.

2. **Desired Goal**: To provide information to Colorado specialty crop producers about the results and recommendations from CSU's research programs relating to specialty crops

Performance measure: For results and recommendations to be presented to producers through Agriculture Experiment Station Bulletins, Cooperative Extension Fact Sheets, E-extension webinars and at Field Day events and conferences targeting specialty crop producers, as well as made available online

Baseline: For 2008, CSU's Field Day event drew more than 300 attendees. Findings were also presented to more than 200 producers at the Colorado Agriculture Big & Small Conference and results were posted to CSU's Specialty Crop Program website.

The goal for 2012 was to produce three print publications, two webinar presentations, and present findings at three conferences and also maintain similar Field Day attendance as previous years.

Outcome:

Because of the loss of the SCBGP coordinator, the goals for 2012 were not met for publications and webinars, but the presentations and field days were held and are listed below. Results from continuing research are currently being reviewed and compiled and will be published in early 2015.

Presentations in 2012 to deliver research results from CSU SCP research were:

- "Fertigation Using Drip Irrigation", Agriculture Big and Small Conference, Brighton, CO, 2/16/12
- "High Tunnel Production Panel: Pest Management", Ag Big & Small, 2/16/12
- "Organic Vegetable Production", Front Range Organic Growers, Denver, 4/16/12
- High Tunnel Field Day, HFRC, CSU, 4/21/12
- "Garlic Production", Montrose Farmers Market Association, 9/8/12
- "Soil Fertility in Organic Systems", Montrose Farmers Market Assoc., 9/8/12
- Rocky Mt Small Organic Farm Field Day, HFRC, CSU, 10/12

Field Days

- High tunnel field day – April 2012 – 32 attendees

3. **Desired Goal** To position CSU as a credible source of information and research relating to specialty crops

   Performance Measure: Percent increase in the number of average monthly visitors to CSU's Specialty Crops Program website

   Baseline: Had not yet been established.

   Outcome: 29,090 hits to website were recorded for 2011. Results for 2012 are unavailable because the website was moved and hits were not counted. Data and information continued to be added to the website, including webinars and publications. http://hortla.agsci.colostate.edu/research-programs/specialty-crops/. This problem has been remedied and website hits are now being counted.

4. **Desired Goal:** To facilitate the development of emerging specialty crop grower and marketing associations**.**

Performance Measure: Develop strong relationships with emerging specialty crop grower associations and facilitate their development

Baseline: Participate in initial discussion of organization formation with two specialty crop grower groups

Outcome: Rocky Ford Growers Association (www.rockyfordgrowersassociation.com) has been formed. This group was organized primarily to protect and enhance the market identity and overall viability of the melon industry in the Arkansas Valley of Colorado.

RFGA was formed in response to the image and marketing crisis associated with Listeria contamination of melons that, while grown in Colorado, were not grown in the Rocky Ford area. Growers recognized the need for an organization to protect the Rocky Ford melon "brand", as well as other benefits to be derived from market identity. The CSU Department of Horticulture & LA (specifically Dr. Mike Bartolo) and the Markets Division of the Colorado Department of Agriculture (specifically Director Tom Lipetzky) provided their expertise, leadership and other resources to this problem, leading the growers in formation and launch of the RFGA (see http://rfchamber.net/rfga-new-website/).

The Colorado Fruit and Vegetable Growers Association has been formed, a board elected, developed by-laws and a mission statement, have legal status as a 501(c) (6), have developed a web site and social media site, have hired an administrator, launched a membership drive, and developed branding and marketing materials.

Similarly, Mike Bartolo and Tom Lipetzky – along with Adrian Card (Boulder County Extension) and key growers such as Robert Sakata – provided the leadership in initiating the concept of, and organizing, the broad-based Colorado Fruit and Vegetable Growers Association (CFVGA). Organization was followed by a statewide effort to attract members, and the CFVGA is now well underway, with its first statewide conference held in Denver February 25, 2015, in conjunction with the Colorado

Hop trial at CSU Horticulture Field Research Center.

Governor's Forum on Agriculture. More information about the CFVGA is available at http://coloradoproduceorg.ipage.com/about/ .

Beneficiaries

Beneficiaries of the CSU Specialty Crops Program activities include the GREG recipients; new, small or socially disadvantaged operators that have far fewer resources and support than many of their larger, well established competitors. This group of producers needs to be especially creative and innovative in order to find profitable and sustainable paths. Just as importantly, it needs to have technical expertise available, founded on applied research that is appropriate for their scale and regional uniqueness.

Beneficiaries also include those students and guests attending outreach functions of the GREG recipients. Remotely, web browsers search for and find useful information provided by the GREG participants and by the CSU SCP. Through this overall approach, the number of beneficiaries quickly multiplies into the thousands.

GREG grant recipients receiving funding this year from this grant numbered seven. Thirty-two producers and other interested parties attended the high tunnel field day. Attendees at presentations and other field days (listed above) numbered above 200. Staff in the horticulture department answered 25 phone calls or emails about specialty crops. The website was recreated late in 2013 so website hits were only 67, but for 2014 numbered 2,902. The CSU Specialty Crops Program - Grower Research and Education Grants Facebook page has 86 followers.

Lessons Learned

Research conducted by CSU addressing needs of specialty and small farm producers included a hop variety trial, high tunnel production of vegetable crops (for the purpose of season extension) and evaluation of plastic mulches for weed control.

The Hop Variety Trial failed due to a virus, hop stunt viroid. A second trial was planned for 2012 and an additional of a windbreak was recommended (wind was damaging plants). Because of the loss of the SCBGP coordinator, this 2012 trial did not take place.

Research on evaluation of plastic mulches for weed control has indicated that a heavy grade of plastic mulch is recommended due to the frequency and severity of hail occurrences. All crops in the field were destroyed and had to be replanted in 2011, 2012, 2013, and 2014. This makes it impossible to collect data. Additional investments in hail protection in the form of floating row covers, hail netting and expansion of high tunnel production is recommended.

Due to the loss of the Specialty Crops Coordinator, research was not coordinated or documented sufficiently in 2012. This is a challenge for the person who eventually steps into the role as Coordinator or Interim Coordinator. The current Interim Coordinator is working to document the intervening years of research and results.

The loss of the Specialty Crops coordinator in 2012, subsequent search with the candidate ultimately refusing the position, and a second, failed search have led to a lack of consistency in the program. Because a Coordinator was not present, focusing on the goals and outcomes, some goals and outcomes were not reached. A new, dedicated interim Coordinator is now in place. A new candidate search will interview candidates for a full-time Coordinator in early 2015. This program should continue at CSU with renewed vigor in the future.

Contact person:

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Additional information:

Plastic mulch – At the HORT farm using thicker plastic mulch for moisture retention.

Hop irrigation trial at CSU Horticulture Field Research Center.

DEVELOPMENT AND COMMERCIALIZATION OF A "BRANDED" COLORADO POTATO

FINAL REPORT

Project Summary

This project was a three year project, a continuation from a previously funded Specialty Crop Grant, focused on reducing the risk involved in commercializing new potato varieties for potato producers and determining the correct marketing mechanisms to bring new varieties to market, especially varieties with unique health and/or nutritional attributes.

The first year of the project involved increasing seed production for the new varieties selected for the project and assessing consumer knowledge of potato nutrition and the resulting health benefits attributable to potatoes. In year two of the project the selected varieties were produced commercially to increase marketable quantities of the varieties. Also a "brand" message track was developed to survey and test consumer knowledge. Year three outcomes involved bringing the new varieties to market with a "branded" message and determining how effective the message was with consumers.

The intention was for all FDA nutritional guidelines to be met to insure the validity of any and all marketing claims. The loss of the key marketing-consumer expert on the project prevented the research team from determining how effective the "branded" message is with consumers. But all the varieties selected in the project have been commercially marketed with success and we do have partial knowledge of how consumers view the potato nutrition and health attributes of the marketed varieties.

Project Approach

There are essentially three components of this project that were used to address the goals and outcomes; the agricultural production and best management practices of the four potato varieties, the nutritional assay of the health attributes within the four varieties, and the consumer and marketing research necessary to understand how these varieties can be best be branded and marketed. These components were a continuation of work from the previously funded project. Each of these components met with varying degrees of success which are outlined below in the next section.

Goals and Outcomes Achieved

1. Agricultural Production and Best Management Practices (BMP)

The table below summarizes the various timelines for the project.

Production and BMP's	Timeline	Status
Identify the cultivars	2009-2010	Completed, 4 varieties identified
Develop acreage for production	Summer of 2010	Seed production completed, commercial production being identified for 2012
Develop production strategies	Production season 2010-2011-2012	Ongoing
Develop Post Harvest strategies	Storage season 2011-2012 (this project)	Ongoing

Identified cultivars and met the seed supply needs for the project
The four varieties utilized for this project were: Rio Grande Russet, Purple Majesty, Crestone Russet (CO99053-3RU), and Masquerade (AC99329-7PW/Y).
Each of these varieties was selected for unique characteristics that make them appropriate for the project.

Rio Grande Russet is a very smooth, high yielding russet with low inputs like water and Nitrogen and excellent flavor and high levels of antioxidants. Crestone Russet is another very smooth, medium to late maturing russet with low inputs, high yields and excellent flavor. Additionally, it has some significant disease resistance to certain problems including powdery scab and *Fusarium* dry rot. Purple Majesty is the first really good tasting purple skin, purple flesh cultivar to make it to the market. It has exceptional health attributes, fits well into the specialty market and has a very smooth, consistent tuber type with excellent yields and few disease issues. Finally, Masquerade is a bi-color skin (purple/yellow) with yellow flesh. It has great production potential with excellent yields of medium sized tubers, is very pretty, striking in appearance, and has phenomenal flavor and health attributes. Its only disadvantage is the rapid germination of the tubers when removed from storage due to a very short dormancy.

Seed acreage was developed at the SLV Research Center for each of the cultivars to meet the requirements for this part of the grant. In 2012 there were 10.2 acres of Rio Grande Russet (G1-G4), 7.4 acres of Crestone Russet (G1 and G3), 2.0 acres of Purple Majesty (G1-G3) and 1.4 acres of Masquerade (G1-G3) providing a stable seed supply for interested potato growers in Colorado. Producers in the certified seed program have begun to adopt these cultivars as part of their routine growing operation. The increase in certified seed acres being planted indicates that the new varieties are being accepted and marketed commercially.

Table 1. Cultivar acreage in the Colorado seed potato certification program.

Cultivar	**2012**
Rio Grande Russet	1171
Crestone Russet	64
Purple Majesty	177
Masquerade	8

***Previous year's results can be found in the FFY10 Specialty Crop Block Grant Program*

Nutrient Management (Samuel Essah)
Nutrients evaluated included nitrogen, phosphorus, potassium, and compost rate, along with nitrogen and calcium application timing. Weekly petiole samples were analyzed for nitrogen, phosphorus, and potassium. This data was used to establish optimum petiole nutrient concentration levels to achieve maximum yield and quality goals in production.

Each treatment was replicated four times. Treatments included nitrogen application rates at 60, 120, and 180 lb N/ac. A control treatment was included where no nitrogen fertilizer was applied. During the spring, soil samples were taken from the experimental site and analyzed for residual

soil nitrate nitrogen (N). Water samples were taken from the irrigation well and analyzed for nitrate nitrogen concentration. The residual soil N and irrigation water N added up to 28, 68, 61, and 80 lb N/ac, for Rio Grande Russet, Crestone Russet, Purple Majesty, and Masquerade, respectively. Knowledge of the residual soil and irrigation water N was important to help estimate how much nitrogen fertilizer was needed for maximum tuber yield and quality.

Plant Population and Density

Tubers were sampled weekly after tuber initiation to determine bulking rates. The harvested plots were graded and sized. The objective of these studies was to evaluate the optimum plant population needed for maximum tuber yield and quality of four Colorado cultivars. Plant population varied depending on the in-row seed spacing treatment. Seed spacing treatments included planting potato seed tubers at 10, 12, and 14 inches.

Specific production guidelines for each of the four cultivars were developed based on the field testing done by Dr. Samuel Essah's trials and the results communicated to growers through his research publications at the Southern Colorado Rocky Mountain Agriculture Conference the last two years.

Disease Resistance (Robert Davidson)

All variety plots were inspected weekly and screened for diseases during the growing season. No major problems were noted.

Each of the four cultivars show differing levels of susceptibility to common disease problems found in the San Luis Valley (Table 2), but all have relatively good levels of disease resistance and/or tolerance and few major problems have been seen under field growth. (It is of note that each of the cultivars has been repeatedly screened for several years and under very different environmental conditions with few problems demonstrated.)

Table 2. Ranking of major disease issues by cultivar

Disease	**Rio Grande Russet**	**Crestone Russet**	**Purple Majesty**	**Masquerade**
BRR[1]	9	8	9	8
PLRV	5	7	5	4
PVY	6	7	5	4
Powdery Scab	2	1	5	5
Pink Rot	4	4	7	4
Soft Rot	7	4	7	4
Dry Rot	4	5	4	5

Results of this work have been communicated to producers raising these cultivars on a one-on-one basis and during the Southern Rocky Mt. Ag Conference over the last two years.

Two abstracts were submitted to the annual PAA meeting in 2012 and presentations made during the conference; "Cultivar improvements for powdery scab resistance in the Colorado Cultivar

Development program" and "Evaluation of potato cultivars in a greenhouse for determining potential to reduce powdery scab inoculum levels in soil".

Post-Harvest/Storage Management (Sastry Jayanty)

After harvest plot samples were tested using different storage regimes. Information gathered from 2010 and 2011 storage testing was incorporated into 2012 testing. One problem encountered in the storage results was discovering that Masquerade has a very limited natural dormancy and will require special care in storage handling to insure an extended marketability window. If they are stored at 38^0F (3.3^0C) with 95% relative humidity, they can maintain four to six months without sprouts. But after leaving storage they quickly developed sprouts at room temperature within days. Four different sprout inhibitors were tested (two organic and two conventional) to extend dormancy in these two cultivars after removing from long-term commercial storage. Conventional sprout inhibitors such as CIPC have proven more effective than of all the other sprout inhibitors available. During the 2011-2012 storage season we tested both organic and conventional inhibitors at three different temperature regimes and multiple application timings to extend dormancy.

Highlights

- Masquerade and Purple Majesty, when treated with sprout inhibitor EC-15 and maintained at 38°F, lost less weight than untreated controls.
- CIPC treated tubers had no significant sprouting at any temperature and tubers lost more weight as temperature increased.
- Masquerade lost the least weight at 38°F when treated with EC-15 and Clove Oil and had no sprouting in either. Conventional sprout inhibitors such as CIPC2 and CIPC allowed minimum sprouting even at 50°F during initial 3 months.
- At 38°F Purple Majesty lost the least weight with EC-40 and CIPC2 and had no sprouting in either temperature. Purple Majesty had minimum sprouting at 50°F with CIPC2 and CIPC; and lost the least amount of weight with CIPC2.
- DMN is not an effective sprout inhibitor even at 38°F storage temperature.

Results of Dr. Jayanty's research were presented the last two years of the project at the Southern Colorado Rocky Mountain Agricultural Conference. Producers were able to get printed copies of the research and recommendations for the "branded" varieties.

2. Nutritional and Health Attributes (Sastry Jayanty and David Holm)

One of the goals for this element of the project was to determine FDA requirements for the nutritional claims we are hoping to use and the steps in the approval process. Specific testing was completed to analyze the nutritional attributes of the four selected varieties. Dr. Jayanty presented the some of the results of his experimental testing to the Potato Association of America on August 15, 2011 in Wilmington, North Carolina.

During the course of the project nutritional and heath attributes of the four selected cultivars and advanced selections were characterized. This information was generated based on the tests that include estimation of resistant starch levels, antioxidant activities, nutritional composition analysis and flavor. The idea was to present the consumer with improved dietary health attributes

of these cultivars for brand identification and to increase sales and profitability. This matches the information needed by the consumers based on survey data gathered during the project. As consumers develop a better awareness of health attributes, it is to be expected that they would start to use this information in developing buying choices for potatoes.

Table 3

Cultivars	Total starch (g/100 g potato material)	RS (g/100g total starch)		NRS (g/100g total starch)
		RS – Raw	RS- Baked	
Dark Purple Flesh	63.37	12.06	4.76	95.45
Purple Majesty	70.46	13.43	3.24	96.86
Yukon Gold	60.10	34.64	2.32	97.73
Rio Grande Russet	59.84	23.71	9.70	91.16
Rio Colorado	63.32	17.98	3.73	96.40
Mountain Rose	62.16	12.15	6.71	93.72
Lenape	63.90	14.52	6.14	94.22
CO94035-15RU	68.49	20.27	5.33	94.94
CO95051-7W	71.81	32.86	5.72	94.59
AC96052-1RU	66.37	14.62	10.38	90.60
CO97226-2R/R	60.48	9.81	8.77	91.93
CO97232-1R/Y	66.00	23.78	5.49	94.80
AC97521-1R/Y	61.02	23.76	7.07	93.39

Resistant starch

Potatoes are rich in carbohydrates and are also a good source of minerals and vitamins. However, recent evidence linking the glycemic index (GI) of foods to risk for a number of chronic diseases and the general perception that potatoes have a high GI, have raised concerns about the health benefits of potatoes. Starch rich foods, such as potatoes, when consumed are metabolized to the monosaccharide glucose, which then enters into Blood stream causing a temporary rise in blood glucose levels.

This "glycemic response" is measured as the GI. Resistant starch (RS), which as a low GI and alpha amylase inhibitors (AAI) are believed to reduce a food's GI. Leaves and tubers were harvested from different cultivars grown in Colorado and advanced selections being developed at the SLVRC for estimation of AAI and RS. The data indicate that there is significant variability in potato selections and cultivars for both RS and AAI (Table 3)

Antioxidant levels and effect of cooking on them in different cultivars

Nutritional value	Cooking method		
	Boiled	Microwaved	Baked
Total phenols	↓	↓↓	↓↓
Total flavonoids	↓	↓↓	↓↓
Total flavonols	↓	↓↓	↓↓↓
Lutein	↓	↓↓	↓↓
Pelargonidin	↓	↓↓	↓↓
Delphinidin	↓	↓↓	↓↓
Malvidin	↓	↓↓	↓↓

Antioxidant activity	↓	↓↓	↓↓↓

Potato tubers, which are one of the richest sources of antioxidants, are always cooked before human consumption. The objective of this study was to understand the effects of various domestic cooking methods, i.e., boiling, microwaving and baking on total phenolics, flavonoids, flavonols, lutein, anthocyanins and antioxidant activities in 5 cultivars and 9 advanced selections with different skin and flesh colors after 6 months of storage. The three cooking methods reduced the levels of these compounds and the percentage of DPPH (2,2-Diphenyl-1-pikryl-hydrazyl) radical scavenging activity in all the cultivars and selections. Boiling minimized these losses. Red fleshed tubers contained more flavonoids, whereas purple tubers contained more flavonols. Despite severe loss of these compounds due to cooking, both the flesh types retained larger amounts of all these compounds due to higher initial levels. Decline in the radical scavenging activity is directly related to loss of these compounds due to cooking
treatments in all white and colored flesh tubers. Red and purple fleshed tubers exhibited greater radical scavenging activity than yellow and white fleshed tubers after each of the cooking treatments. Table 4 has the summary of nutritional values of potato cultivars and advanced selections affected by cooking methods. The number of inverted arrows indicate the degree of loss of nutritional value.

Selenium levels in Colorado cultivars

Selenium (Se) is an essential trace element in the human body. Development and survival of animals and humans will be at risk without Se. Higher levels of Se in blood plasma have been correlated with reducing many cancers. Potato plants are being supplemented with selenium (Se) in several countries to enrich tubers with Se for obvious health benefits. Se is not an essential nutrient and interferes with metabolism of essential nutrient sulfur (S) in the plants. The objective of the present investigation was to find out the activities of Se-independent glutathione peroxidase (Se-Ind-GPx), Se-dependent glutathione peroxidase (Se-Dep-GPx), and thioredoxinreductase (TRxR) enzymes in stored potato tubers grown on non-Se-enriched field; and their relationship with tuber Se and S levels. Our results indicate that these enzyme activities and the nutrient levels in the tubers were significantly influenced by genotype. Tubers of Rio Grande Russet, Crestone Russet, and Purple Majesty can supply more than the recommended dietary allowance (RDA) of Se to adult humans.

Furthermore, Se-Dep-GPx activities were influenced by Se levels in the tubers.

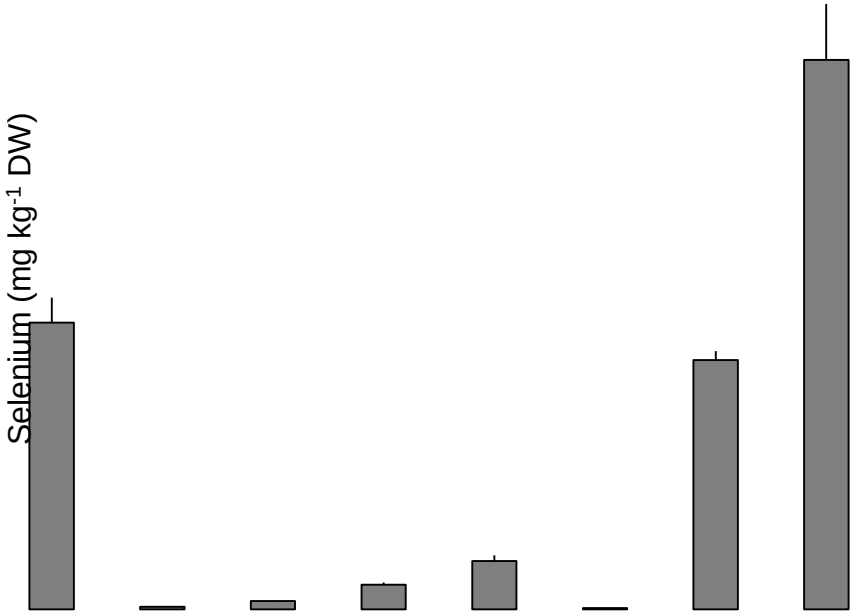


Figure 1

Volatile compound analysis in Colorado potato cultivars and advanced selections using solid phase micro extraction technique

We tested three cooking methods, (i.e., boiling, microwaving and baking) on six month old stored tubers. Six to eight randomly selected tubers from each potato cultivar or advanced selection of Rio Grande Russet, Purple Majesty, Crestone Russet and Masquerade were tested using Solid Phase Micro Extraction (SPME) and Gas Chromatograph and Mass Spectrometry (GCMS). We quantified 10 different flavor volatiles in three different cooking methods. Our results indicate cultivars differ in volatile profiles and cooking treatment affects volatile concentrations. Different cooking methods affect volatile compounds in a different way. Furfural which brings sweet and nutty flavor completely disappeared in the baking process. Pungent, Sweet and Fruity flavor compound, 3methyl butanal is higher in Purple Majesty and Masquerade. Alpha coapene which is a dominant potato flavor compound is present in all cultivars tested except Crestone Russet. Limonene and carene are major terpenes in the volatiles of Crestone Russet.

Highlights

- After baking, Rio Grande Russet retained a considerable amount of resistant starch
- Polyphenols and pigments in potato were reduced by boiling, microwaving and baking.
- Antioxidant activity of the tubers was decreased by cooking methods.
- Red and purple tubers retained higher antioxidant levels after cooking methods.
- Loss of polyphenols and pigments were low in boiling and severe in baking.
- Selenium is very important dietary supplement

- Tubers of Rio Grande Russet, Crestone Russet, and Purple Majesty can supply more than the recommended dietary allowance (RDA) of Se to adult humans
- Out of 4 cultivars and advanced selections tested, Purple Majesty and Masquerade exhibited more flavor compounds when analyzed using GC-MS after steaming, microwaving and baking.

Publications:
Venu Perla, David G. Holm and Sastry S. Jayanty* (2012). Effects of cooking methods on polyphenols, pigments and antioxidant activity in potato tubers. LWT- Food Science and Technology 45:161-171.
Venu Perla and Sastry S. Jayanty* (2012). Biguanide related compounds in traditional antidiabetic functional plant foods. Food Chemistry
Venu Perla, David G. Holm and Sastry S. Jayanty* (2012). Selenium and sulfur content and activity of associated enzymes in selected potato germplasm. 2012. American Journal of Potato Research. 89:111-120.

<u>New Variety Identification and Development (David Holm)</u>
The overall goal of this project was to develop cultivars that will help assure that the Colorado potato industry remains productive, competitive, and sustainable and to develop cultivars that provide the consumer with improved nutrition and quality. Therefore it is appropriate that four selections from the Program were used for this project. They were individually identified because of characteristics (nutritional, taste, dietary, and appearance) that would make them good subjects for a branding study.

The process of developing a new cultivar takes 14+ years. Years 1 and 2 are the potato breeding phase of the development process. Parents are selected with desired characteristics and crossed to produce true (botanical) potato seed (TPS). Seedling tubers are then produced from the true seed in year 2. Subsequent years (3+) represent the selection phase of the development process. Each year represents another cycle of field selection. As each cycle is completed, fewer and fewer clones remain and the amount of seed per selection is increased. Throughout the evaluation process selections are tested for characteristics of importance. Some of these characteristics are associated with consumer acceptance and recognition in the marketplace.

Publications:
Madiwale, Gaurav P., Reddivari, Lavanya, Holm, David G., and Vanamala, Jairam. 2011. Storage elevates phenolic content and antioxidant activity but suppresses antiproliferative and pro-apoptotic properties of colored-flesh potatoes against human colon cancer cell lines. J. Agric. Food Chem. 59:8155B8166.
Madiwale, Gaurav P., Reddivari, Lavanya, Stone, Martha, Holm, David G., and Vanamala, Jairam. 2012. Combined effects of storage and processing on the bioactive compounds and pro-apoptotic properties of color-fleshed potatoes in human colon cancer cells. J. Agric. Food Chem

3. Marketing and consumer research program (Jennifer Keeling-Bond)

The marketing research under the direction of Dr. Jennifer Bond focused on assessing consumer knowledge of potato nutrition and health characteristics possessed by potatoes. The primary methods for this involved sensory analysis, label creation, secondary data review, and development of choice set survey and consumer experiment protocols.

Sensory analysis

Testing was conducted in mid-July of 2009. Statistical analysis of the in-home and trained panels was completed in 2010 and a draft of the keys findings has been completed.

Label creation

Sample labels were created by Alysce Christian and submitted to the marketing team for feedback. This feedback was instrumental in creating the final label design. The labels are appropriate for use on both poly-bags and clam-shell type packaging.. Data gathered in pre- and post-revelation on nutrition information testing determined that consumers were willing to pay more after being exposed to the nutrition information. This information will be valuable in determining label information.

Sample Label

Secondary Data Review

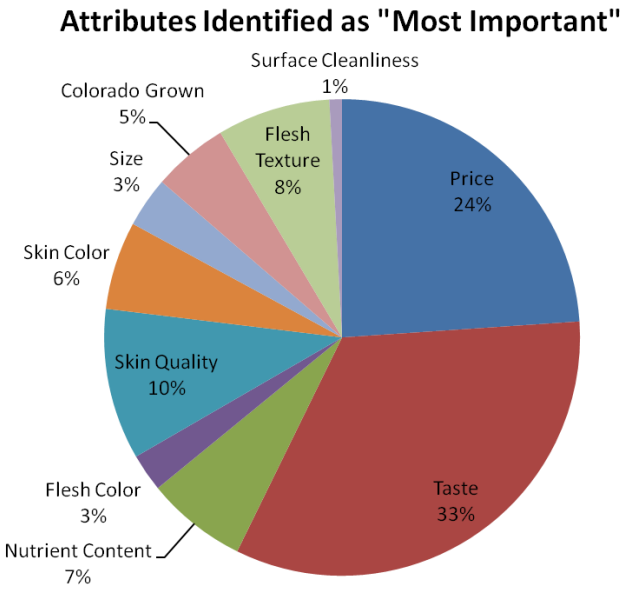
A review of national consumption trends and a published report has been completed. Further analysis of this data was conducted in early 2011 along with the consumer experiment research to determine which health attributes have the greatest value to consumers. The date revealed that consumers were "Least Knowledgeable" about resistant starch content (44%) followed by antioxidant levels (31%). Discovering baseline consumer nutrition levels are important in developing marketing strategy moving forward.

Choice Set Survey and Consumer Experiments

Experiments consisted of a consumer demand survey and analysis of willingness to pay for various combinations of label claims and product attributes. This was followed up with practice auctions, and actual potato auctions. Following the auctions sensory evaluation using the four potato varieties was conducted on both baked and microwave potatoes. Each experiment took between 1.5-2 hours and six actual experiments were conducted with over 140 volunteer subjects. Key consumer preferences have been identified through this research. The graph below illustrates consumers "most important" potato attribute preference.

Key points developed from the consumer surveys include:

- Taste is the most important attribute by a factor of 2.5 – 5 over price and other physical attributes that affect mouth feel and enjoyment
- Nutrient content, source, and convenience are ranked last
- Significant heterogeneity – positive correlations between nutrient content and source
- Consumers are most knowledgeable about preparation methods and price, but least knowledgeable about nutrition information
- Consumers self-report most knowledge about preparation (by a factor of 2-7) over price
- Report very little knowledge regarding nutritional information, caloric content, and source
- Negative correlations between knowledge about price and vitamin and mineral content
- There is a negative relationship between knowledge about nutrition and knowledge about price
- Consumers view Taste and related attributes (skin quality, flesh texture, and color), along with price, as most important when purchasing fresh potatoes,
- Consumers in our study did view nutrition, source, or convenience as very important
- Bottom line: Taste and related attributes dominate others in importance, and very little is known about potato nutrition qualities



Additional marketing efforts around Colorado (Robert Davidson)

The cultivars used in this project were distributed to several private growers in Colorado over the past three years for use as garden seed and for sale in commercial operations. Overall satisfaction for the cultivars had been high with several producers indicating a strong demand, particularly for the Purple Majesty and the Masquerade. One operation, Jumping Good Goat Dairy, Ms. Dawn Jump, has utilized these cultivars in 1-2 acre plots for the past two years under organic production. She has been quite successful in marketing these potatoes from both the field, at harvest, and from the store during the year. Other locations utilizing these potatoes have

included producers in Hesperus, Pagosa Springs, Gunnison, Dove Creek, Fort Collins, and Teller County. Additionally, this project was extended to include three producers as part of a Specialty Crops mini-grant from CSU for two years. Again, the project was aimed at introducing these cultivars and others to the general farmer's markets in the state, especially utilizing organic production techniques.

These four cultivars were also served during the week long Annual Potato Association of America meetings held in Denver, CO in August, 2012. Over 200 potato research scientists from North America and parts of the rest of the world attended. Each cultivar was served in a different format (baked, mashed, boiled, etc.) and for different meals, but overall opinions of the taste, texture, etc. were rated extremely high by all participants at the conference.

Sections of this project and the sensory analysis were presented at the Potato Association of America poster session at the Potato Expo in Las Vegas in January, 2013. Over 1500 growers and industry representatives attended the Potato Expo and over 550 growers viewed this poster presentation.

The findings were communicated to the three hundred fifty Colorado potato producers during the annual Southern Rocky Mt. Ag Conference held in Monte Vista, CO in February, 2012.

Research Abstracts were submitted to the Western Agricultural Economics Association for inclusion in the summer meeting schedule but were not accepted.

Beneficiaries

The groups that will benefit from this project include all potato producers in Colorado and their buyers, private growers and gardeners in Colorado, and the base level North American consumer. There are an estimated 165 potato growers in Colorado and most work with a major

warehouse to market commercial potatoes. This information will be developed and sent to the growers to help increase their knowledge base regarding potential branding of potatoes. It is of note that each of the cultivars selected has been widely accepted into the marketplace and there is real momentum developing to brand the various cultivars and include their attributes. The Rio Grande russet was reported as the second most popular russet potato variety in the San Luis valley according to planting data reported by N.A.S.S. in 2012. The Colorado Certified Potato Growers' Association developed an exclusive release with Albert Bartlett Company in Scotland for Purple Majesty potato. This cultivar is currently branded and sold as "Purple Majesty" in the U.K. and has received wide acceptance and a good knowledge base with consumers on its great health attributes and flavor! The Masquerade variety is increasing in acreage but having difficulty with a very short dormancy period. Research is ongoing to develop management techniques for Masquerade to maximize its marketability.

Another portion of this project which will be key to moving ahead with branding efforts in Colorado concerns the consumer survey's which were conducted. It is clear that consumers have a fairly well evolved sense of the various attributes potatoes bring to the table, but there is also a need to continue education, especially where various health attributes are concerned.

Lessons learned

There were two key objectives for the project which were instrumental in its success and acceptance by the industry. The first was to increase the planted acreage of the four project varieties with the intention of having adequate supply to use for continuing the necessary agronomic studies, for consumer marketing studies and testing, and on a limited basis test commercial marketing. This objective was met without difficulty as the needed seed and commercial testing quantities of the four varieties were produced and are currently in storage.

The second key objective involved testing the consumer message track that is being developed. The idea was to refine the consumer message so that consumer knowledge of potato nutrition and health attributes is being clearly received and understood. The consumer studies conducted have shown that a consumer's willingness to pay for different potato varieties is influenced by the consumer's initial sensory experience with a variety, their pre-existing knowledge of potato nutritional properties, a variety of demographic variables, and the consumer's exposure to additional nutritional information prior to purchase and consumption. For example it was discovered that consumers were willing to bid higher prices for the four varieties with a health attribute after receiving nutrition education and tasting the varieties. They were unwilling to do this with the control variety of Russet Burbank after the same procedure. This knowledge will help us move closer to achieving the goal of branding cultivars in Colorado.

Finally, this project showed that there is a continuing spectrum of activities which will need to take place to successfully implement "branding" of potato cultivars. Because Jennifer Keeling-Bond left CSU employment mid-year some of the work needed for the project was left uncompleted. Colorado State University was unable to identify someone to fill Dr. Bond's role in the project. This precluded completing the full consumer evaluations of the four cultivars. For the same reason the bag labels for each cultivar were not completed. Also, work is still needed to have the FDA accept and validate the nutritional guidelines as established in this project so that they are available for marketing and branding of the cultivars. Without this key component

of the project it is impossible to determine how much consumer recognition and knowledge of these "branded" potatoes increased. It is unfortunate that this was the case because clearly there is recognition by potato producers that consumers are interested in "branded" potato products. Three different potato growers have applied for exclusive control over some of the varieties involved in this project including Masquerade and CO97226-2R/R. This grower interest is driven by what is perceived as great consumer interest and potential for "branding" these varieties.

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